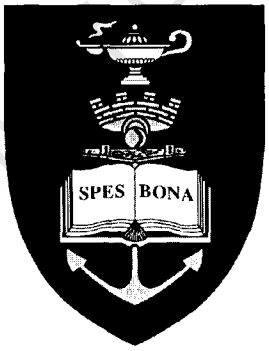
Foreign Direct Investment and Growth in Tanzania: Roles of the Domestic Financial System and Human Capital.

Phillip G. Mboya; MBYPHI002



This thesis is submitted in partial fulfillment of the requirements for the degree of Master of Commerce in Applied Economics of the University of Cape Town.

October 2009

As the candidate's supervisor, I have approved this dissertation for submission.

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Declaration

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Name _____ Date _____

Dedication

To Alinda, Warren, Willard and Olga

Abstract

Recent theoretical and empirical literature suggests various links through which foreign direct investments (FDI) exert positive impact on economic growth. It is argued that FDI will have a positive effect on domestic economic growth under certain circumstances. Some proponents of FDI and growth have emphasized on the role of the level of technological advancement and human capital while others have focused on the level of the development of the domestic financial system. In the former case, the literature suggests that better trained people will easily acquire technologies introduced with FDI inflows and spread it to the rest of the economy while in the later case, it suggests that a well developed domestic financial system enhances efficient allocation of financial resources and therefore it is a pre-condition for FDI to positively contribute to economic growth. In this paper, both propositions are investigated. The paper examines whether Tanzania has sufficiently developed its financial system and invested in human capital adequately to enhance its FDI absorptive capacity and let it contribute positively to economic growth for the period 1970 - 2006. The study uses bounds testing approach of cointegration within the framework of Autoregressive Distributed Lag (ARDL) developed by Peresan et al. (2001) also used by Fosu and Frimpong (2006); and Khan (2007).

An ARDL estimation technique follows three main steps. After testing for unit roots, an Ordinary Least Square (OLS) model is estimated in order to test for the existence of long-run relationships between the variables by conducting F-test for joint significance of the coefficients of lagged levels of variables. After establishing that cointegration exists, both short and long run relationships are estimated simultaneously.

Our results suggests that there exists a cointegrating relationship between FDI, financial system, human capital, openness, institutional quality and economic growth for Tanzania.

We find that FDI will have positive effects on the long-run economic growth in Tanzania only when credit to the private sector to GDP is above approximately 30 percent. The results provides an empirical evidence to support the argument that credit to the private sector is the better proxy for the level of development of the financial sector especially for the countries like Tanzania with weak and inadequately developed capital market. Our results also provide

empirical support that FDI is an important vehicle for technological transfer only when the domestic economy reaches a minimum threshold stock of human capital. Our findings seem to suggest that with reference to human capital, FDI will start to have positive impact on growth when the level of human capital per capita is above approximately 6.2. Tanzania should therefore strive to pursue policies that raise the level of local skills and build up human resource capabilities in order to benefit from FDI inflows.

Acknowledgement

This study was made possible by contributions of a number of individuals and institutions to whom I feel greatly indebted. I may not be able to mention all of them but those absent from the list remain equally important and their support is greatly appreciated.

Firstly, I would like to acknowledge and extend my sincere appreciation to my employer, The Bank of Tanzania (BOT) for giving me a study leave and for providing full financial support throughout the study period under special masters programme in economics.

Secondly, I would like to extend my cordial gratitude to Dr. Fulbert Tchana Tchana for his helpful and conscientious supervision. His challenges and expertise guidance are extremely treasured. I acknowledge the support received from members of staff of the School of Economics under diligent leadership of Dr. Edwin Muchapondwa during the first semester and Prof. Anthony Black during the second semester and the last part of my course. I am indebted to Ms Paula Bassingthwaighte, postgraduate studies administrator for her kind support.

Lastly but not least, I wish to express my heartfelt gratitude to my lovely wife Alinda C. Rweyemamu for her spiritual, moral and material support and to my kids Warren, Willard and Olga for their endurance when I could not give them fatherly love at the time when I was at school.

The support received from the above personalities and institutions notwithstanding, all errors or omissions are mine.

Acronyms

AD	Arusha Declaration
ADF	Augmented Dickey Fuller
AGOA	African Growth Opportunity Act
AR	Autocorrelation
ARCH	Autocorrelation Conditional Heteroscedasticity
ARDL	Autoregressive Distributed Lag
BOT	Bank of Tanzania
BMP5	Balance of Payments Manual 5
CET	Common External Tariff
CMSA	Capital Market and Securities Authority
CREP	Credit to the private sector to GDP
DF	Dickey Fuller
DSE	Dar es Salaam Stock Exchange
DUM	Dummy Variable
EAC	East African Community
EAC – CU	East African Community Customs Union
EC	Error Correction
ECGS	Export Credit Guarantee Scheme
EPZ	Export Processing Zone
FDI	Foreign Direct Investment to GDP
GDP	Real Gross Domestic Product
RGDPP	Real Gross Domestic Product per Capita
HUM	Human Capital
IFEM	Interbank Foreign Exchange Market
IFS	International Financial Statistics
IMF	International Monetary Fund
IPC	Investment Promotion Centre
LDCs	Least Developed Countries
NESP	National Economic Survival Program
ODI	Overseas Development Institute
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares

PSRC	Parastatal Sector Reform Commission
RESET	Regression Specification Test
RSS	Residual Sum Squares
SADC	Southern African Development Community
SAP	Structural Adjustment Program
SSA	Sub-Sahara Africa
TIC	Tanzania Investment Centre
TNBC	Tanzania National Business Council
TIR	Tanzania Investment Report
TRA	Tanzania Revenue Authority
TZS	Tanzanian Shillings
TIR	Tanzania Investment Report
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
US$	United States Dollar
VAT	Value Added Tax
WIR	World Investment Report

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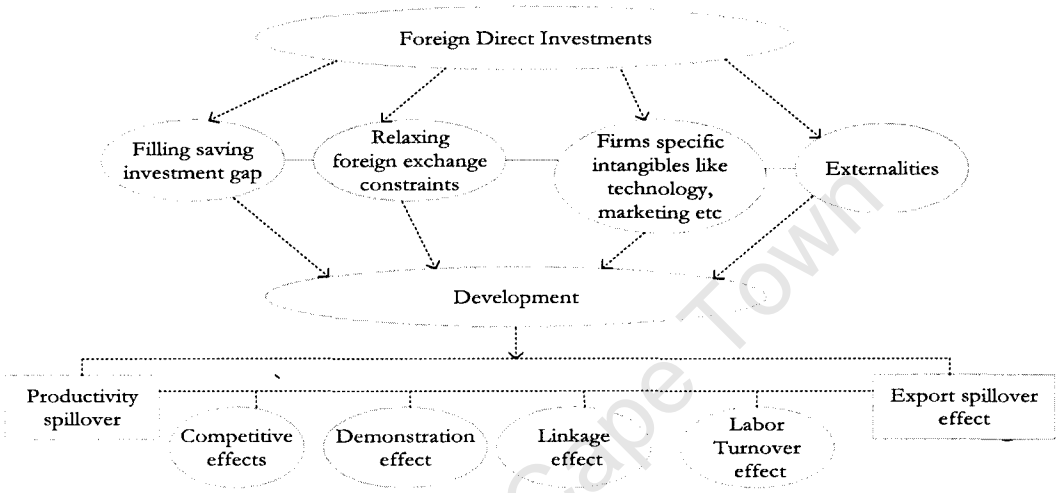
1. Introduction

Vast literature on growth recognizes the role of FDI in enhancing economic growth particularly in developing countries. The channels through which FDI promotes growth in the host country vary. The most important channel is through technological transfer and spillover effects. Khan (2007) argues that FDI leads to technology transfer from multinational firms to affiliates in the host countries while spillover occurs through the interaction of multinational firms with domestic suppliers, customers and worker. Also, Alfaro et al. (2003), Zhan (2001), UNCTAD (2006), Barro and Sala-i-Martin (1995, 1997) argue that FDI (i) offers financial resources, transfer of modern technology, market access and managerial know-how to the host economy, (ii) brings various networks such as sales and procurement networks to the host countries, which can be used to expand business opportunities, (iii) increases competitive pressures to the local firms that result in an improvement in technical and allocative efficiency in the host country, (iv) generates employment, raises productivity, transfers foreign skills and technology, enhances exports and contributes to the long-term economic development. The link between FDI and economic development as summarized by Khan (2007) is depicted in Figure 1.

McKinnon (1973), Shaw (1973), Hermes and Lensink (2003) argue that the level of development of the financial system of the host economy is a pre-condition for FDI to positively contribute to economic growth. For the domestic firms to effectively tap the advantages associated with FDI, they will have to increase their efficiency and streamline their operations which include, among other things, buying new machines and hiring more skilled labor. This requires financial resources, lack of which, will constraint potential entrepreneurs. As Alfaro et al. (2003) argues, *...'well-functioning financial markets, by lowering costs of conducting transactions, ensure capital is allocated to the projects that yield the highest returns, and therefore enhances growth rates.'* The existence of a well functioning financial as well as stock markets will increase not only the spectrum of financial resources to the local entrepreneurs but also creates linkage between domestic and foreign firms. A well functioning domestic financial system therefore acts as a catalyst of technology transfer from foreign to local firms through efficient allocation of resources and improving absorptive capacity of the local firms which then translates into growth. In the same vein, the impact of FDI on growth, particularly for least developing countries, depends on the extent of adoption and implementation of new technologies that are already in use in the leading

countries. Thus, acquisition of human capital and adoption of foreign technology are important conduits for the diffusion of technology, (Barro and Sala-i-Martin, (1995); Borensztein et al. 1998).

Figure 1: The Link Between FDI and Development



Source: Khan (2007)

Tanzania has for the past two decades made several efforts to attract Foreign Direct Investment. Notable efforts include major policy and structural reforms carried out since mid 1980s. These reforms have played a significant role in improving the country's investment climate as FDI has continued to increase. For instance, the stock of FDI increased by more than 160 percent from 1,992.2 USD million in 1999 to 5,190.7 USD million in 2006. In the same period, inflation remained at an average of 5.2 percent while the country's growth rate of real GDP rose from 4.7 to 6.2. Mining and tourism sectors, with larger proportions of FDI resources, recorded relatively higher growth rates than other sectors, though their share in the total output is still small (BOT, 2007). However, the agricultural sector, which has the largest share in total output and employment, attracted the smallest share of FDI inflows. In light of the relative good performance of Tanzania's economy and increasing FDI inflows, it is imperative to investigate the roles played by the domestic financial system as well as human capital.

1.1 Statement of the Problem /Study Objective

Policy makers particularly in emerging economies are striving to attract FDI due to the conviction that it reduces saving-investment gap, increases productivity, technological

transfer, new processes, managerial skills, employees training, international product network and access to markets, among others. It is however argued in the literature that the country's capacity to tap these advantages may be limited by local conditions. In particular, inadequately trained population and lack of developed local financial system limit the countries' ability to benefit from potential FDI spillovers. The literature admits that a well developed domestic financial system is an important channel via which FDI enhances growth. As well, adoption of new technology inherent in FDI inflows depends on the extent at which domestic human capital is able to absorb and implement new skills and technologies. The purpose of this study is to empirically investigate whether the level of development of Tanzania's financial system as well as human capital enhances the positive relationship between FDI and economic growth for the period 1970 - 2006.

The empirical investigation will be done using bounds testing approach to cointegration analysis developed by Peresan et al. (2001)[1]. This approach has more advantages over other procedures in that (i) it is more appropriate in smaller sample size (Pesaran et al.(2001); Tang, (2001, 2002); (ii) long-run and short run parameters are estimated simultaneously; and (iii) variables of the model need not to be integrated of order 1 for time series regression.

1.2 Significance of the Study

The findings of the study will provide empirical evidence on whether FDI has some growth-enhancing effects in Tanzania and whether the financial system and human capital provide stimuli to FDI contribution to growth. The study will provide inputs for policy decisions and directives. It will also shed some light on whether benefits of FDI highlighted in the literature also accrue to Tanzania given the country's specific conditions such as the level of development of the financial system as well as human capital stock.

Some studies linking FDI and growth in Tanzania have been carried out. One of them was conducted by Mboya (2003) to investigate the link between FDI, domestic financial system and growth. The current study makes the following contributions to the existing empirical literature:

[1] This approach is being used for the first time in Tanzania to investigate the role of the local financial system and human capital in enhancing the effects of FDI on economic growth.

i. The previous studies on FDI and growth used secondary school enrolment rate to proxy for human capital. Economic growth proponents such as Krueger and Lindahl (2001) argue that this is not an appropriate proxy for human capital since not only that secondary school enrolment rate is a flow but it also fails to take into account the lag with which investment in schooling enrolment are converted into human capital. In the current study, human capital is measured by the average number of years of schooling per capita of the working population.

ii. The current study also considers the role of openness and institutional quality which are considered to influence growth and among the important determinants of FDI inflow. See for instance Islam et al. (2006); Easterly and Levine (2003); Rigobon and Rodrik (2005); and Stroup, (2007).

iii. Mboya (2005) concludes that a certain level of development of the local financial system is important for FDI to have a significant impact on economic growth for Tanzania but the threshold value at which FDI starts to have a positive effect on economic growth is not established. This study attempts to establish the threshold level of development of the domestic financial system and human capital above which FDI starts to have positive effects on economic growth.

iv. The current study considers the role of domestic financial system as well as human capital in enhancing the impact of FDI on growth for Tanzania while Mboya (2005) focused on domestic financial system alone.

v. The present study also provides first attempt to analyze the link between FDI, financial system and growth; and FDI, human capita and growth for Tanzania using recent econometric technique of cointegration namely bounds testing approach to cointegration over the period 1970 - 2006. The advantages of this technique are discussed in the subsequent sections.

1.3 Hypotheses to be tested

- FDI contributes more to economic growth when the level of development of the domestic financial system reaches a certain level;
- Volume of credit to the private sector is positively related to real GDP;
- High level of human capital provides higher absorptive capacity and therefore makes FDI to contribute more to economic growth; and
- Openness increases productivity and therefore it is positively related to economic growth.

1.4 Organization of the study

The study is organized in five sections. The first section covers introduction, background and the rationale for carrying out the study. The second section provides an overview of FDI inflows to Tanzania covering recent trend of FDI, distribution by sector, region, major source countries and sources of financing of FDI. It provides a brief overview of the evolution of Tanzania's financial system. In addition, the section highlights the conceptual framework on modeling of FDI, financial system, human capital and growth. Section three is on theoretical and empirical literature on FDI, financial system, human capital and growth including an outline of related studies in Tanzania and the gap that the current study seeks to cover. As well, the section describes the methodology with which the study was carried out focusing on estimation technique, choice of variables, model specification, data type and sources. Section four provides the empirical analysis, that is, data properties and estimation results, model evaluation and diagnostic tests, discussion and interpretation of the results. The fifth section entails a summary of the major findings, main conclusions, recommendations and suggested areas of further research.

2. FDI in Tanzania and theory on FDI and growth

This section is composed of two main parts. The first part provides an overview of the environment in which FDI has operated in the country over the period of study, recent trends of FDI inflows, distribution by sector, region, major source countries and sources of financing. We also give a brief outline of Tanzania's financial sector performance for the period under review. In some cases, reference is made to other countries for comparison purposes. The second part provides both theoretical and empirical literature focusing on FDI and growth; financial development and growth; and human capital and growth.

2.1 FDI Inflows and financial system in Tanzania, an overview

2.1.1 Background

The environment in which FDI has operated in Tanzania can best be described in two phases. The first phase starts in 1961 after independence to 1986 when major economic reforms were initiated. The second phase starts from 1986 to date, a period during which most reforms were implemented.

In the early years of independence, FDI was given priority and the Foreign Investment and Protection Act of 1963 was enacted. The Act provided for, among others, repatriation of investment proceeds, full and fair compensation in the event of nationalization or other forms of compulsory expropriations, interests and dividends and fiscal incentives like generous tax and investment allowances, reduction in customs duties on imported inputs. This period was characterized by dramatic changes in net inflows of FDI. For instance, the net inflow of FDI rose from US$ 9.5 million in 1962 to about US$ 138.02 million in 1966 (BOT, 1980). By 1967 the economy recorded a real GDP growth rate of 4 percent while the annual inflation was 12.5 percent.

However, the period 1967-1985 was marked by the enactment of the Arusha Declaration in 1967 which required the state to have effective control of the major means of production through the Nationalization Act of 1967. Consequently, foreign and domestically privately owned enterprises were nationalized. This created unfavorable environment for the foreign investors. While some of them allowed their capital and plants to deteriorate, others shut down their businesses (Bagachwa, 1992). As a result, the net inflow of FDI fell from US$ 138.02 million recorded in 1966 to US$ -32.13 million in 1987.

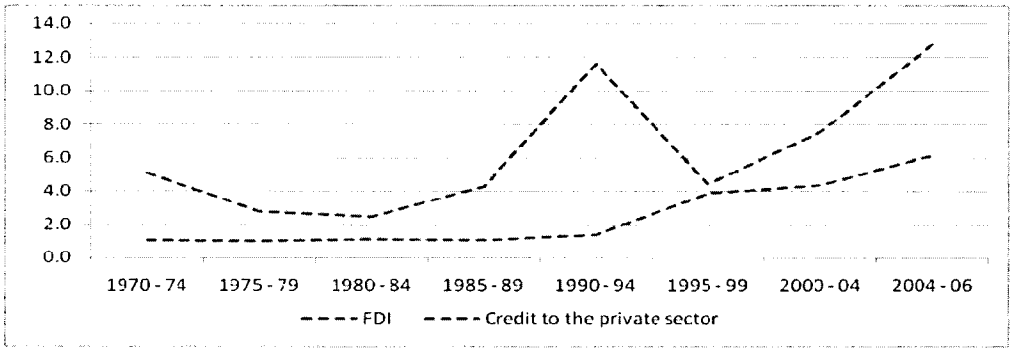
Box 1. Major Policy Developments to Attract FDI Since 1990s

- Establishment of Investment Promotion Centre (IPC) in 1990;
- Enactment of Banking and Financial Institutions law in 1991 that opened doors for foreign banks to operate in Tanzania, leading into increased competition improvement of the quality of services in the financial sector;
- Enactment of Foreign Exchange Act in 1992 that lead into abolition of trade and exchange restrictions;
- Abolition of import/export licenses/permits (except for few negative list items);
- Liberalization of foreign exchange regime that allowed for more flexibility in accessing foreign exchange for import/export trade and remittances;
- Introduction of Inter-bank Foreign Exchange Marketing (IFEM) in July 1993 that led into market determination of the exchange rate;
- Formation of the Presidential Parastatal Sector Reform Commission (PSRC) in 1993 to oversee the privatization of the nationalized and other government owned enterprises;
- Complete liberalization of the current account of the balance of payments that led into Tanzania acceding to Article VII of the IMF in July 1996;
- Establishment of the Capital Markets and Securities Authority (CMSA) in 1994 to oversee the development of the capital markets in the country and to regulate them;
- Establishment of Dar es Salaam Stock Exchange (DSE) in April 1998. Foreign participation however remained restricted until May 2003;
- Establishment of Tanzania Revenue Authority (TRA) in 1996 to streamline the tax regime, followed by the introduction of Value Added Tax (VAT) in July 1998;
- Launching of Mining Policy in 1996 to guide investments in the mining sector;
- Transformation of Investment Promotion Centre into Tanzania Investment Centre (TIC) as a One Stop Centre for all foreign and local investors in 1997. In 2004,TIC was voted the best investment promotion agency in Africa by Africa Investor (Ai);
- Launching of Tourism Policy in 1997;
- The enactment of the Land Act of 1999 to allow collaterization of land;
- Re-establishment of Export Credit Guarantee Scheme (ECGS) in July 2002 to facilitate more exports of Tanzania's traditional commodities;
- Establishment of Commercial Courts in 1999 as an independent unit of the High Court to deal with commercial disputes;
- Tanzania is a member of Southern African Development Community (SADC, 1994) and the East African Community (EAC, 1999, ratified in July 2000) hence expansion of market for its products;
- Tanzania is participating in African Growth Opportunity Act (AGOA);
- Establishment of Tanzania National Business Council (TNBC) in March 2002 to speed-up decision making process particularly of major foreign investments into Tanzania, and holding of annual events of investors round tables for both local and foreign investors;
- Adoption of National Trade Policy in November 2002 to consolidate gains of past trade liberalization measures;
- Enactment of legislation that established Export Processing Zone (EPZ) in 2003. By the end of 2004, seven companies had been licensed under EPZ with a combined investment of US$ 72 million, which created 1,200 direct jobs (TIR, 2004); and
- Tanzania signed the protocol that established the East African Community Customs Union (EAC-CU) in January 2004 that will lead into gradual reduction of tariffs within the EAC member countries and the adoption of Common External Tariff (CET) between the community members and the rest of the world.

The persistency of economic crisis in the country and poor performance in the private sector resulting from nationalization necessitated the government to change its economic policy stance. Thus, the second phase was characterized by the reforms and privatization process which started in the second half of 1980s. The reforms aimed at attaining stable macroeconomic environment and higher economic growth. Exchange rate and price controls were eliminated, trade was liberalized and this created an encouraging investment environment for local and foreign investors. Other measures that were taken to promote private investment activities in the country are summarized in Box 1.

The reform measures that were undertaken improved the country's investment climate significantly. FDI inflow rose from the annual average of US$ 12.6 million in 1987 - 1991 to US$ 416.66 million in 2002 – 2006 (Figure 2). It can be noted from the figure that between 1990 and 1995, credit to the private sector reached the highest peak. This is partly contributed by the recapitalization of the major state owned enterprises that had been privatized. By 2006, Tanzania had accumulated US$ 5.2 billion of stock of FDI compared to US$ 2.0 billion recorded in 1999 (TIR, 2006). Tanzania's share of FDI inflows into Least Developed Countries (LDCs) doubled from 2.7% in 1991-1995 to 5.3% in 1996 - 1999 and that of inflows into Sub-Saharan Africa more than doubled, from 1.5% to 3.3% in the same period. During the mid 1990s, Tanzania was found to be one of the seven best performing countries for FDI in Africa by the United Nations Conference on Trade and Development (UNCTAD) report of 1998. In 2006, Tanzania was the fourth major recipient of FDI inflows among African LDCs after Sudan, Equatorial Guinea and Chad (World Investment Report, 2006).

Figure 2: Inflows of FDI and credit to the private sector (percentage of GDP), 1967 – 2006



Source: United Republic of Tanzania, Tanzania Investment Report (Various issues)

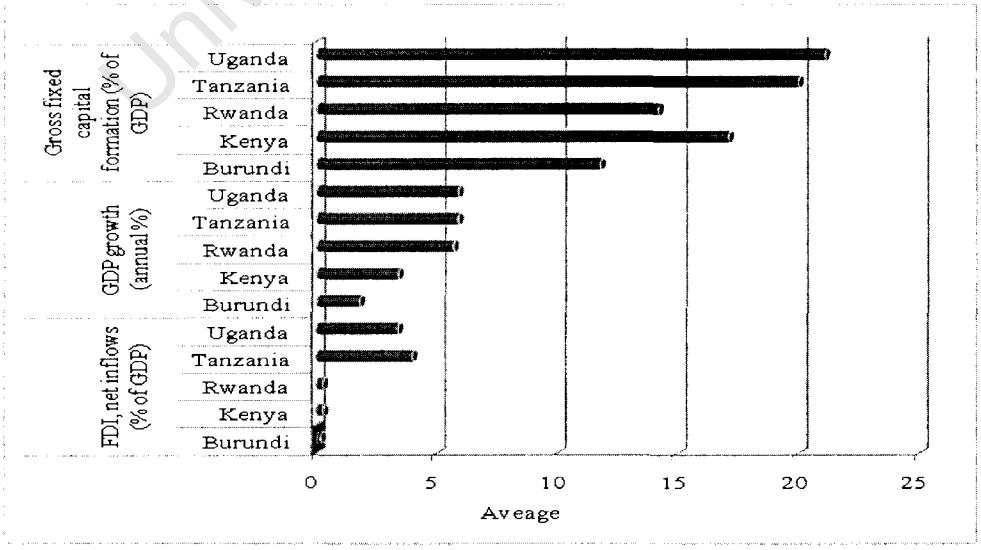
A comparison of Tanzania's FDI performance with other countries in East Africa during 1999 - 2006 is depicted in Table 1 and Figure 3. During this period, Tanzania performed comparatively better than the rest of East African countries in terms of net inflows of FDI as a percentage of GDP. In terms of GDP growth rates and gross fixed capital formation to percentage of GDP, Tanzania and Uganda performed better.

Table 1: GDP growth, FDI and gross fixed capital formation in East Africa, 1995 - 2006

		1999	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*Average*
FDI, net inflows (% of GDP)	Burundi	0.0	1.6	0.0	0.0	0.0	0.0	0.1	0.0	0.2
	Kenya	0.1	0.9	0.0	0.2	0.5	0.3	0.1	0.2	0.3
	Rwanda	0.1	0.5	0.3	0.2	0.3	0.4	0.4	0.5	0.3
	Tanzania	6.0	5.1	4.1	4.0	3.0	2.9	3.6	3.7	4.0
	Uganda	2.3	2.7	2.7	3.2	3.2	4.3	4.3	4.2	3.4
GDP growth (annual %)	Burundi	-1.0	-0.9	2.1	4.4	-1.2	4.8	0.9	5.1	1.8
	Kenya	2.3	0.6	3.8	0.5	2.9	5.1	5.7	6.1	3.4
	Rwanda	7.6	6.0	6.7	9.4	0.9	4.0	6.0	5.3	5.7
	Tanzania	3.5	5.1	6.2	7.2	5.7	6.7	6.8	5.9	5.9
	Uganda	8.1	5.6	4.9	6.4	4.7	5.4	6.7	5.4	5.9
Gross fixed capital formation (% of GDP)	Burundi	7.5	7.5	7.3	9.5	10.7	11.2	15.5	24.9	11.8
	Kenya	15.6	16.7	18.2	17.2	15.8	16.1	18.3	18.8	17.1
	Rwanda	13.1	13.4	13.7	13.5	13.9	15.0	15.8	14.8	14.2
	Tanzania	15.4	17.4	16.8	19.0	21.0	20.8	21.9	28.0	20.0
	Uganda	19.8	18.5	19.3	20.1	21.5	22.9	22.7	24.2	21.1

Source: International Financial Statistics – IMF website.

Figure 3: GDP growth, FDI and gross fixed capital formation in East Africa (average), 1995 - 2006



2.1.2 Tanzania's FDI in Perspective

Source country of FDI

Inflows of FDI into Tanzania originate from diversified source countries and regions. Table 2 shows inflows of FDI by 9 top source countries for the period 1999 - 2006. During this period, South Africa, Canada, United Kingdom and Singapore were the main source of FDI inflow to Tanzania account for an average of 54.5 percent. South Africa and Canada alone contributed an average of 37.6 percent of total inflows. The share of FDI from South Africa rose from 6.6 percent in 1999 to 23.61 percent in 2006 while that of Canada remained almost the same as it rose from 16.56 percent in 1999 to 17.38 percent in 2006. Other African countries that feature in the top 9 countries are Ghana and Kenya which together account for an average of 6.9 percent.

Table 2: FDI inflows to Tanzania, the top 9 source countries, 1999 - 2006

Values in US$ Million

Source Country	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*Average*	*Average % of total*
South Africa	32.1	98.0	137.0	34.9	7.1	92.0	128.2	145.8	84.4	19.5
Canada	80.6	0.0	21.5	230.3	59.0	41.0	87.8	107.3	78.4	18.1
United Kingdom	35.0	31.0	42.5	38.3	47.0	35.3	111.1	39.4	47.5	10.9
Singapore	0.0	0.0	0.0	0.0	0.0	0.0	74.2	134.5	26.1	6.0
USA	23.5	27.5	31.9	29.9	2.8	1.0	19.4	11.3	18.4	4.2
Ghana	134.2	0.0	1.5	0.8	2.7	0.0	0.0	0.0	17.4	4.0
Kenya	19.6	4.2	11.4	6.7	18.5	11.8	12.6	16.6	12.7	2.9
Netherlands	4.6	40.8	-8.4	1.5	0.8	8.2	21.2	28.7	12.2	2.8
Switzerland	9.0	29.8	19.5	1.9	7.9	1.7	6.5	1.9	9.8	2.3
Rest of the world	151.7	60.1	129.2	43.8	121.6	138.0	243.2	131.7	126.9	29.3
Total	**490.3**	**291.4**	**386.1**	**388.1**	**267.5**	**329.3**	**704.5**	**617.3**	**433.8**	**100.0**

Source: United Republic of Tanzania, Tanzania Investment Report, (Various issues)

Sectoral analysis of FDI in Tanzania

In terms of stock (cumulative value), the five leading countries namely South Africa, Canada, United Kingdom, United States of America (USA) and Netherlands accounted for 64.8 percent of total stock of FDI in Tanzania whereby large share was directed into the mining sector followed by wholesale and retail trade. Sector concentration of the stock of FDI from the top 5 countries for the year 2006 is depicted in Table 3.

Table 3: Sectoral distribution of FDI stock by top five countries in Tanzania, 2006

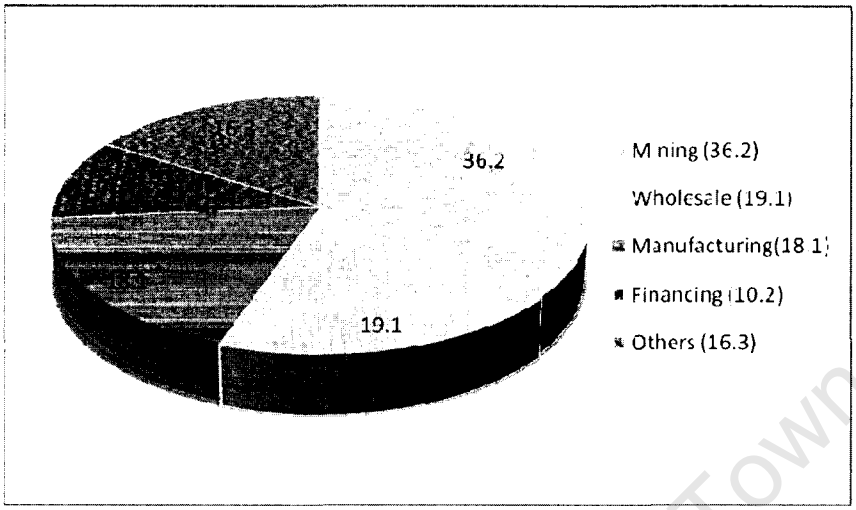
	Canada		South Africa		United Kingdom		USA		Netherlands	
Sector	**Value USD Mil.**	**% of total**	**Value USD Mil.**	**% of total**	**Value USD Mil.**	**% of total**	**Value USD Mil.**	**% of total**	**Value USD Mil.**	**% of total**
Agriculture	3.6	0.4	0.6	0.0	8.6	1.4	34.9	14.7	17.0	7.8
Comm. & social	0.0	0.0	2.8	0.2	0.8	0.1	0.0	0.0	0.1	0.0
Construction	0.0	0.0	8.5	0.6	30.7	4.9	0.0	0.0	0.1	0.0
Fin. & insurance	3.1	0.3	92.2	7.0	98.8	15.9	49.8	21.0	4.1	1.9
Manufacturing	18.8	2.0	82.0	6.2	123.9	20.0	98.6	41.6	35.1	16.2
Mining	828.1	86.1	911.3	68.7	39.9	6.4	11.3	4.8	0.0	0.0
Transp. & com.	1.1	0.1	1.7	0.1	9.9	1.6	4.4	1.9	149.5	69.0
Utilities	106.7	11.1	0.0	0.0	95.9	15.5	0.0	0.0	0.0	0.0
Wholesale	0.2	0.0	226.7	17.1	212.2	34.2	38.1	16.1	10.9	5.0
Total	**961.6**	**100.0**	**1325.8**	**100.0**	**620.7**	**100.0**	**237.1**	**100.0**	**216.8**	**100.0**

Source: United Republic of Tanzania, Tanzania Investment Report, 2007

Figure 4 shows sectoral distribution of the stock of FDI in 2006. Four sectors: Mining, Wholesale and retail trade, Manufacturing and Finance together accounted for 83.6 percent of the total stock of FDI in 2006. The Mining sector has attracted the largest share of the stock of FDI since 2002 due to country's abundance in mineral resources, gold in particular. The sector has the highest growth rate averaging 13.7 during 1998 – 2007 (BOT, 2007). Also, the World Investment Report (WIR, 2005) shows that recent trend of FDI inflows particularly in the developing countries has been concentrated in natural resources particularly minerals. Between 2002 and 2006, the share of mining in Tanzania's total export increased from 39.14 to 48.06 percent (BOT, 2008).

Finance and insurance sector has recently attracted significant FDI inflows as well due to the ongoing financial sector reforms which have created conducive investment climate in the sector. For instance, the amount of FDI that went into the sector rose by 97.6 percent from US$ 268.6 million in 2000 to US$ 530.7 million in 2006. The Agriculture sector which contributes about 45 percent of GDP and employs about 80 percent of the population continued to receive negligible share of FDI in 2006, about 3.3 percent of the total stock. It has been argued that, owing to its large share in GDP and largest employer, more investments in the Agriculture sector would have more direct impact on poverty reduction initiatives.

Figure 4: Sector share of FDI stock in Tanzania, 2006



Source: United Republic of Tanzania, Tanzania Investment Report, 2007

Financing of FD I inflows

Financing of FDI inflow to Tanzania is somewhat skewed towards loans from shareholders and related companies which, on average accounted for more than 75 percent of total inflows between 2002 and 2006 (Table 4). Long term loans on their own accounted for more than 50 percent. Financing by long-term loans is preferred over the short-term ones because they are relatively more stable. During the time of crisis, foreign investments financed in this nature cannot flee the country as easily as other more liquid form of capital. While more liquid flows are likely to increase volatility in the domestic economy during crisis, less liquid capital are likely to adjust to the domestic economic conditions (De Gregorio, 2003). In addition, interest rates on long-term loans are often lower than the short-term. Financing of FDI by equity and long-term loans may be taken as a sign of growing investors' confidence in the domestic economy and good investment climate. Tanzania Investment Report (2004) reveals that investors have positive perceptions on Tanzania's investment climate particularly on fiscal and monetary policies, market availability, regional economic integration and trade policies. Positive perceptions were on account of economic liberalization measures, market opportunities such as Africa Growth and Opportunities Act (AGOA), Everything But Arms (EBA), Export Processing Zone (EPZ) and Tanzania's geographical location, access to SADC and EAC market and political stability.

Table 4: FDI inflows to Tanzania by source of financing, 2002 - 2006

Values in Millions of US$

Source of Finance	*2002*	*2003*	*2004*	*2005*	*2006*	*Average (%)*
Direct Equity Investment	34.6	77.4	109.3	190.3	60.9	20.6
Retained earnings attributable to foreign shareholders	0.3	2	4.1	8.6	3.7	0.8
Long-term loans from shareholders and related companies	288.4	97.8	133.2	284.5	349.5	50.3
Short-term loans from shareholders related company	59.3	76	52.6	200.2	201.7	25.7
Suppliers' credit from related companies	4.6	11.2	30.1	11.2	0.9	2.5
Total	**387.2**	**264.3**	**329.2**	**694.9**	**616.6**	**100.0**

Source: Tanzania Investment Report (TIR), 2006

Linkage of FDI to the domestic economy

Technology transfer and spillovers are among the important avenues through which FDI promotes growth in the host country. Khan (2007) argues that FDI leads to technology transfer from multinational firms to affiliates in the host countries and spillover occurs through the interaction of multinational firms with domestic suppliers, customers and worker. Relationship between FDI and domestic investments is one of the areas that have received critical examination in the literature. While there is an increasing agreement on the affirmation that FDI is beneficial to growth, the impact of FDI on domestic investments is still controversial. Proponents of FDI and growth argue that one of the principle objectives of promoting FDI is to boost its positive externality to the growth of the domestic investments because the later is the key source of capital formation and a reliable source of growth. Such externalities ensue from, among others, market linkage and the improvement by FDI of infrastructure such as electricity, water, road, telecommunication and other amenities in the communities surrounding FDI enterprises. However, contrasting effects can happen in cases where FDI demeans the profitability of domestic investments and thus crowding them out. Mashindano (2004) argues that, the importance of FDI on domestic investments may also be demeaned by structural weaknesses and specific firms characteristics. Such negative effects are amplified if there is a mismatch between foreign and domestic investors in terms of divergence of sectors of interest and also if domestic investments are not associated with joint ventures with foreign investments.

In the case of Tanzania, the institutional framework guiding the promotion and facilitation of foreign capital inflows does not provide policy influence appealing foreign investors to relate to their local counterparts (Wangwe et al. 2005). Their interaction is therefore dependent on market requirement and business opportunities. Such weaknesses, coupled with weak production base, poor quality standards and weak market institutions, minimize the extent at which domestic investments can benefit from positive externalities from FDI. In this respect, deliberate efforts are necessary to encourage high level of cooperation between domestic and foreign investors in order to maximize benefits of FDI spillover effects. Tanzania Investment Report (2006) shows that there is increasing linkage between FDI inflows with the domestic economy in that:

- the value of shares of domestic investments in companies with foreign shareholding increased by 26.9 percent from US$ 943.3 million in 2001 to US$ 1,196.8 million in 2005;
- borrowing from the domestic banks by foreign owned companies almost doubled from 26.7 in 2001 to 50.0 percent of total borrowing in 2005;
- between 2002 and 2005, total employment in surveyed companies (700 foreign owned enterprises) increased by 42.0 percent of which 96.8 percent were Tanzanians
- domestic sourcing of raw materials increased from 31.0 percent in 2003 to 45.0 percent in 2005
- about 67.0 percent of total output produced by foreign owned companies was consumed in the domestic market.

2.1.3 Tanzania's financial system, an overview

Tanzania like most African countries adopted IMF/World Bank supported Structural Adjustment Programme (SAP) in 1992 in which case, financial sector reforms formed a major component. The country's financial sector reform involved restructuring of financial institutions, enhancing legal and regulatory framework for banking operations, and liberalizing interest rates. The objectives of the financial sector liberalization were to attain sustainable growth in the real sector by boosting resource mobilization, motivating competition in the financial system and enhancing quality and efficiency of credit allocation. The reforms implementation measures included:

- Restructuring of existing financial institutions through write-offs of non-performing assets;

- Promoting competition by encouraging the establishment of domestic and foreign-owned private banks including joint ventures;
- Creating a more efficient regulatory and legal framework by enacting new financial Acts in parliament including Banking and Financial institutions Act 1991, 1993; Loans and Advances Realization Trust Act of 1991; Foreign Exchange Act of 1992; Capital Markets and Securities Authority Act 1994 and The Bank of Tanzania Acts of 1995 and 2006 that provide for more responsive regulatory role of the Bank in relation to the formulation and implementation of monetary policy and to provide for the supervision of banks and other financial institutions and also to provide for other related matters.
- The Banking and Financial Institutions Act, 2006 (Act No. 5/06) which provides for: comprehensive regulation of banks and financial institutions; regulation and supervision of activities of savings and credit co-operative societies and schemes so as to maintain stability, safety and soundness of the financial system and therefore reduce the risk of loss to depositors.
- Strengthening the efficiency of the Central Bank's regulatory and supervisory roles of financial institution and nurturing an efficient money market by introducing other new instruments; and
- Liberalization of interest and exchange rates.

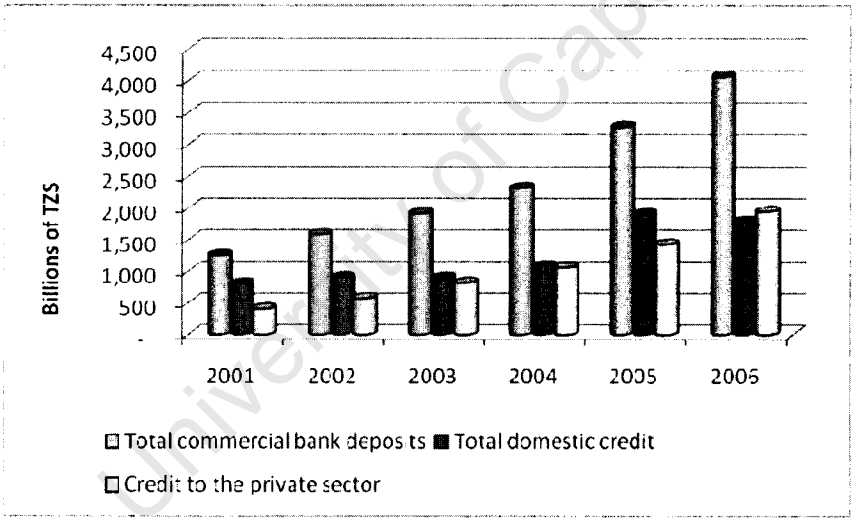
The reforms have changed the course and quality of financial services offered in the country. New commercial banks, bureau de change, insurance companies, stock exchange and related financial institutions have been established. The financial sector is now largely privately owned by local and foreign investors. Banks are free to determine the level of interest rates based on market forces. Currently there are 26 licensed commercial banks, 11 non- banking institutions, 12 other financial institutions, and numerous bureau de changes. Notable improvements in the financial system include:

- increased competition in the financial sector which in turn has lead into increased credit to the private sector from US$405.73 million in 1999 to US$ 1,554.57 million (11.8 percent of GDP) in 2006;
- Share of deposits in private banks to total deposits increasing from 51.5 percent in 1999 to 80 percent in September 2006.
- The total number of bank branches increased from 195 in 2001 to 240 in September 2006.

- The public participation in capital markets increased with market capitalization of US$2.3 billion and 97,000 shareholders in 2006, compared to US$182.07 million and 30,500 shareholders in 1999.

More indicators of the development of the financial system are depicted in Figure 5. It can be noted from the figure that total credit to the domestic sector is almost the same as credit to the private sector alone due to the small share of lending by the commercial banks to the government and state corporations. This is largely due to the fact that since 1985 focus has been to change from state to privately run economy and since then efforts are being made to promote private sector led economy. It can be noted from the figure that credit to the private sector for 2006 is higher than the total domestic credit. This is due to net credit of TZS -152.4 billion to the central government.

Figure 5: Indicators of development of Tanzania's financial system, 2001 – 2006



Source: Bank of Tanzania, Annual Report 2005/06 and IFS

2.2 Theoretical and empirical literature review

2.2.1 FDI and growth, the theory and evidence

There exists an ample literature on investment and growth. In the context of traditional growth models such as Harrod (1939) and Domar (1946), capital formation boosts standard of living, productivity and higher economic growth. Harrod – Domar growth model is built on the premise that economic growth depends on the quantity of capital and labour. Higher

levels of investment lead to capital accumulation, which generates economic growth. The model implies that while labour supply is plenty in less developed countries the availability of physical capital is limited leading to low economic growth. The model also implies that less developed countries' incomes are too low to enable high rates of saving, and therefore accumulation of the capital stock through investment is low. The model is however widely criticized in that its basic assumptions that investors are only influenced by output and the relative price of labour and capital is fixed and used in equal proportions are believed to be false. Furthermore, the model implies that poor countries must borrow to finance capital investment in order to trigger economic growth. It is however argued that such borrowings often cause repayment problems later.

Robert Solow in 1956 formed an extension of the Harrod-Domar model by adding labor as a factor of production; requiring diminishing returns to labor and capital separately, and constant returns to scale for both factors combined; and by introducing technology variable that varies with time distinct from capital and labor. This extension allows increasing capital intensity to be distinguished from technological progress. According to Solow, the rate of economic growth is determined by the rate of capital accumulation which is in turn determined by the savings rate and the rate of capital depreciation. The model predicts that long-run growth is exogenously determined and an economy will always converge towards a steady state rate of growth, which depends only on the rate of technological progress and the rate of growth of the labor force. Accordingly, a country with a higher saving rate will experience faster growth and countries with the same technology and preferences will converge to the same level of income and long-run growth rates subject to the absence of international capital mobility.

Solow type models have however being criticised due to their failure to appreciate the role of entrepreneurship and strength of institutions which may speed up and facilitate growth respectively. In addition, the models use total factor productivity as a measure of technological progress but do not explain how or why technological progress occurs. These shortcomings led to the development of endogenous growth models which consider technological progress and/or knowledge accumulation to be endogenously determined.

Endogenous growth models expand the role of capital to include knowledge (apart from plant and equipment) and focuses on the creation of technological knowledge and its transmission, innovation and imitation (Khan, 2007). They emphasize on the role of R & D, human capital

accumulation and technology transfer. In the framework of endogenous growth models, Borensztein et al. (1998) argues that international mobility of capital in the form of FDI is a vehicle for knowledge transfer, introduction of new processes, acquisition of managerial skills, employees training, international production network and access to markets. In essence, the new growth models provide powerful support on the positive relationship between FDI and growth. It is argued that the LDCs do not have the necessary conditions in terms of infrastructure, personnel, well developed financial markets, social and economic conditions needed to innovate and generate new discoveries and designs. They therefore have to adopt technology that is already produced in the developed countries through FDI. De Mello (1999) and De Gregorio (2003) assert that FDI inflows may bring with them to the domestic economy, technologies and knowledge that are not readily available and in this way increase productivity and growth. Grossman and Helpman, (1991) and Barro and Sala-i-Martin, (1995), have also emphasized the significance of technological change brought by FDI inflows for economic growth.

Ayanwale (2007) identifies four ways through which technological spillover can take place from foreign to domestically owned enterprises namely vertical linkage between affiliates and domestic suppliers and consumers, horizontal linkage between the affiliates and firms in the same industry in the host country, labour turnover from affiliates to domestic firms and lastly, internalization of R & D. He argues that the pace of technological change in the host economy will depend on the innovative and social capabilities and absorptive capacity of domestic enterprises. He provides empirical support on the positive link between FDI economic growth for the case of Nigeria in which case, investments in the communications sector were found to have highest potential for growth.

There are certain prerequisites that recipient countries must meet in order to fully benefit from FDI inflow. The degree to which the host country can reap the benefits associated with FDI largely depends on the extent to which they can adopt and implement new technologies available in the host country. It has been emphasized in the literature that, the benefits of FDI can only be realized given certain characteristics of the environment in the recipient country that determine its absorption capacity. Abramovitz (1986) posits that FDI will not exert a noticeable impact in the development of the host country if they lack a minimum degree of social capacity, which include an adequate level of human capital, economic and political stability, liberalization in the markets and infrastructure. Borensztein, et al. (1998) for instance

argues that technological spillover is possible only when there is a minimum level of human capital available in the recipient country. If this level is higher, the host country will be more competent to integrate and make use of the new technology brought by FDI to the domestic economy. Smarzynska (1999) stresses the establishment of property right arguing that, if property rights are inadequately protected, foreign investors will only carry out low technology investments.

Other authorities emphasize on the presence of a well developed domestic financial sector to ensure competition and minimize financial market distortions (Bhagwati (1978); Ozawa (1992)). Alfaro et al. (2002) argue that the extent of development of financial institutions may be a decisive factor in determining whether foreign firms operate in isolated enclaves with no link whatsoever with domestic economy beyond hiring labour or whether they become catalyst for technology transfers. Other proponents who have emphasized on the development of local financial system for the economy's ability to take advantage of FDI spillovers in the growth literature include Goldsmith (1969), McKinnon (1973), and Shaw (1973).

There exists extensive empirical evidence on FDI and economic growth. Obwana (2001) found that FDI had a positive but insignificant impact on economic growth in Uganda. He however noted that macroeconomic and political stability and policy consistence are crucial in determining FDI inflow to Uganda. Also, Blomstrom et al. (1994) and Borensztein et al. (1998) have shown that FDI flows from developed countries contribute more to growth than domestic investment but the contribution is higher when the recipient country has a minimum level of stock of human capital. The reason is that, well-educated population will easily understand and spread the benefits of new innovations to the rest of the economy. This led to the conclusion that FDI contributes to economic growth if the host country has the capacity to absorb the technologies associated with FDI.

Mbekeani (1997) investigated the role of FDI on the growth process of LDCs and concluded that FDI is likely to flow to regions with high levels of income. The same conclusion was obtained by Overseas Development Institute (ODI) (1997). Blomstrom et al. (1994) argues that only countries that have attained a certain level of income will be able to absorb new technologies and therefore benefit from technological diffusion.

A study by UNCTAD (1999) shows that FDI can have either positive or negative impact on output depending on the variables used in the regression model. Variables that have frequently been used include the initial per capital GDP, political stability, terms of trade, black market exchange rate premiums, openness, domestic investment ratio, education attainment and the level of development of the financial system. The current study uses the later four variables with specific focus on the level of development of the financial system and human capital. Alfaro et al. (2002) uses a cross country data between 1975-1995 to investigate the role of local financial market and the link between FDI and growth. Their empirical findings suggest that FDI plays an important role in contributing to economic growth but the level of development of local financial market was found to be crucial for the positive effects to be realized. The study also suggests that the link between FDI and growth is causal in which case, FDI promotes growth via financial markets.

Bailliu (2000) finds evidence that capital inflows foster higher economic growth only for countries whose banking sector has reached a certain level of development. The effects of capital inflows on growth were found to be negative for countries with poor developed banking sector. Examining the long-run impact of FDI and trade on economic growth in Ghana, Fosu et al. (2006) utilizes bounds testing approach to cointegration for the period 1970 – 2002 and found a negative relationship between FDI and economic growth for the case of Ghana. The study findings were consistent with previous studies conducted in Ghana.

Khan (2007) uses the bounds testing approach of cointegration to examine the link between FDI, domestic financial sector and economic growth for Pakistan for the period 1972 – 2005. His findings suggest that FDI will have positive effects on economic growth for Pakistan only when the level of credit to the private sector relative to real GDP is above 13 percent in the short-run and above 11 percent in the long-run. The study shows that the coefficient of FDI is negative but that of the interaction term between FDI and financial development indicator significant and positive leading to the conclusion that FDI will have a positive impact on growth provided that the domestic financial sector is well developed and functioning effectively.

2.2.2 Financial system and growth, theory and evidence

The role of a well-developed financial system in enhancing the rate of technological innovation, capital accumulation and economic growth was recognized by Schumpeter in

1912 although only recently the interaction between financial market and growth has received a lot of attention (Alfaro et al. 2000). Schumpeter posits that well functioning financial system stimulate technological innovation by identifying and financing the entrepreneurs with the best probability of implementing innovative production processes and producing quality products. The general consensus of an increasing number of theoretical literature and empirical studies on economic growth is however that a well-developed financial sector plays an important role in promoting economic growth. Better financial system improves firms' efficiency because they eliminate the premature liquidation of firm capital and therefore improves liquidity of investment (Levine, 1991). In the framework of Solow growth model, increase in investment and improvement in resources allocation would, within a given state of technology, result into increase in economic growth as capital is being allocated from less to more productive use.

Pagano (1993) highlights three ways in which the development of financial system can affect economic growth. First, as also argued by Levine (1997), more efficient financial sector reduces transaction cost and thus widens the share of savings channelled to productive investment. Surplus saving units may not have sufficient time and capacity to collect and process information about the most rewarding investment opportunities and high cost of acquiring such information may deter capital from being allocated to the best use. Better financial system will economise on information acquisition and processing costs and thus will improve resource allocation. Secondly, it can increase productivity of investment as it promotes specialisation and innovation. Thirdly, the development of the financial sector can affect saving rate by pooling capital resource from numerous desperate severs, enhancing risk diversification, overcoming information asymmetry that would deter savers from relinquishing control of their savings.

Levine (1991), Bencivenga and Smith (1991) and Saint-Paul (1992) have constructed theoretical models showing that efficient financial sector improves the quality of investment and hence accelerates growth. The model constructed by Bencivenga and Smith (1991) postulates that financial sector increases liquidity of investments and decreases premature withdrawals of investments that are detrimental to economic growth. Improvements in resources allocation due to financial intermediation are often seen as providing solutions to liquidity diversification and information asymmetry problems. The inability to pool risk or the existence of asymmetric information between surplus and deficit units may possibly

divert credit towards less productive investment projects and generate credit rationing. These are some of the aspects of financial intermediation that have preoccupied most attention in the literature on financial development and growth (Bernanke and Gertler (1989); Bencivenga and Smith (1991); Levine (1991); Saint Paul (1992); Obstfeld (1994); Odedokun (1996) and Blackburn and Hung (1998)).

Various economic growth proponents have provided empirical support on the role of financial development in enhancing economic growth. Goldsmith (1969) in his study on financial structure and development and using a cross country data observes that periods of higher economic growth have been accompanied with above average rate of financial development. King and Levine (1993a, 1993b) provide empirical evidence suggesting that better financial system increases the probability of successful innovation thus accelerating growth. They report ... "*preponderance of evidence suggests that both financial intermediaries and markets matter for growth even when controlling for potential simultaneity bias. Furthermore, microeconomic-based evidence is consistent with the view that better developed financial systems ease external financing constraints facing firms, which illuminates one mechanism through which financial development influences economic growth*".

Using panel data for 40 developing countries, Bailliu (2000) finds support that capital inflows promote economic growth beyond any effects on investment only for the countries where the banking sector has reached a certain level of development. His study however did not specifically focus on FDI but on broad spectrum of foreign private capital flows which include portfolio and other investments. Khan (2007) provides an empirical evidence for the case of Pakistan to support the hypothesis that a well-developed financial sector can provide a source of comparative advantage by having a better ability to absorb the positive impacts of FDI and hence promoting economic growth. He argues that developing countries like Pakistan fail to reap the benefits associated with FDI inflows due to the lack of, among others, financial system evolution. Therefore, to benefit from the interaction of FDI and growth, Pakistan's financial sector needs to be stimulated through liberalisation.

Hyuha (1980) argues that financial markets have an important role to play in LDCs as they enhance development by transferring resources from the traditional less productive sector to the more productive modern sector. His findings show that financial intermediation reduces

productivity from traditional sector while increasing output in the modern sector. As an economy becomes more monetized, the less productive sector disappears while the modern sector advances. The net effect is positive as the increase in modern sector's output is greater than the decrease in traditional sector's output.

Aziakpono (2005) finds mixed empirical evidence on the role of financial system in enhancing economic growth across South African Customs Union (SACU) member countries. While South Africa showed a strong relevance of domestic financial intermediation in promoting economic growth, the evidence was weak for Botswana, Lesotho and Swaziland. The weak effects for Botswana are associated with biasness in the allocation of credit to the private sector whereby more credit is allocated to the households for consumption rather than business for investment. Weak effects for Lesotho and Swaziland are ascribed to the two countries' relatively weak financial system couple with low returns and other structural and institutional problems.

Ghirmay (2004) provides evidence of existance of long-run relatiship between financial development and growth in 12 out 13 sampled countries in Sub-Saharan Africa. The study found that financial development plays a causal role on economic growth in 8 countries but a birectional relationship in six countries. The study asserts that African countries can hasten growth of their economies by improving their financial system which is consistent with finance and growth literature. In the current study we attempt to assert whether Tanzania's financial sector is developed enough to have positive contribution to economic growth through FDI link.

2.2.3 FDI, human capital and growth, theory and evidence

Theoretical models explaining the role of human capital in the link between FDI and growth are not significantly divergent from those explaining the role of the local financial system as both explain the complementarity between FDI and them in the process of productivity growth. Therefore, our theoretical and empirical exposition on the role of human capital is quite brief. High level of human capital is viewed in the literature as among the key ingredients for attracting FDI and for the host countries to amplify benefits from FDI activities. Countries with higher levels of human capital are generally more attractive particularly for the higher value added enterprises. Training enhances the ability to receive,

interpret, and understand information. Information dispensation and interpretation is important for performing or learning to perform many activities.

Benhabib and Spiegel (1994) have argued that multinational corporations possess superior knowledge which allows them to introduce new products at lower costs. The use of such knowledge requires the presence of an adequate level of human capital in the host economy. Insufficient level of human capital therefore, limits the absorptive capability of the host economy. The introduction of more advanced technology associated with FDI inflows and the presence of absorptive capability in the host country are thus important determinants of economic growth. This explains the complementarity between FDI and human capital in the process of productivity growth and we investigate whether this is the case for Tanzania.

A number of previous studies have shown that human capital is one of the reasons for disparity in the response of FDI to growth. Benhabib and Spiegel (1994) test the effect of FDI on growth in a framework of cross-country regressions and find FDI an important vehicle for the transfer of technology, hence contributing to growth. The study finds strong complementary effect between FDI and human capital whereby the contribution of FDI to economic growth is enhanced by its interaction with the level of human capital. The study uses primary and secondary school enrolment ratios to estimate human capital. Balasubramanyan et al. (1996) and Borensztein et al. (1998) established that the interaction of human capital and FDI had significant effects on growth. They also argue that differences in technological absorption capability explain the variation in growth effects of FDI across countries. Other proponents that have attempted to elucidate the complementarity between FDI and human capital in the process of productivity growth include Romer (1986), Lucas (1988), Sjoholm (1999), Carkovic and Levine (2002), Bengos and Sanchez-Robles (2003) and Durham (2004).

A few studies linking FDI and growth have been conducted in Tanzania. They include Charle (2001), Madete (2000), Yona (1999) and Mboya (2003). Of these studies, only the later attempted to investigate the link between FDI, domestic financial system and growth. However, the study used gross enrolment rate in secondary school as a proxy for human capital. Krueger and Lindahl (2001) have argued that this is not an appropriate proxy for human capital since not only that secondary school enrolment rate is a flow but it also fails to take into account the lag with which investment in schooling enrolment are converted into

human capital. In the current study, human capital is measured by the average number of years of schooling per capita of the working population multiplied by the total workforce. The current study also considers the role of openness and institutional quality which are considered to influence growth and among the important determinants of FDI inflow. See for instance Islam et al. (2006); Easterly and Levine (2003); Rigobon and Rodrik (2005); and Stroup, (2007). We also attempt to establish the threshold level of development of the domestic financial system and human capital above which FDI starts to have positive effects on economic growth. Further, available statistics from the Bank of Tanzania show that the stock of FDI increased by more than 160 percent between 1999 and 2006. It is worth investigating whether this surge in FDI has amplified growth and what role the domestic financial system and human capital have played.

In view of the preceding theoretical and empirical literature, the consensus is that the impact of FDI on growth largely depends on the local conditions of the host country. FDI spillover effects depend on the country's capacity to absorb and make use of the technology brought with multinational enterprises and investment climate including the level of development of the financial system, Obwaba (2004). However, our review of the literature suggests that most studies that have attempted to investigate the link between FDI and growth are cross country while the role of FDI in growth may be country specific depending largely on economic, institutional and technological conditions (Zhan, 2001). This study therefore provides a specific case for Tanzania during 1970 – 2006 period.

3. Analytical Framework and Methodology

3.1 Analytical framework

Theory and empirical studies have emphasized that FDI and economic growth are positively related. However, the potential impact of FDI on economic growth depends on circumstances necessary to facilitate the spillover effects in the domestic economy. Necessary circumstances that have preoccupied previous studies include the level of income, political stability, property rights, the level of development of the domestic financial system and human capital. In our case, we argue that a minimum level of development of the domestic financial system and human capital are necessary for FDI to have a positive impact on Tanzania's economic growth for the period 1970 - 2006. Our analysis is modeled in an aggregate production function framework which has been extensively used in econometric studies to estimate the impacts of FDI inflows on growth in many developing countries. See for instance Ukpolo (1994), Kohpaiboon (2004), Masouri (2005) and Fosu and Frimpong (2006). The standard aggregate production function assumes that, along with conventional inputs of labour and capital used in the neoclassical production function, other inputs such as FDI, credit to the private sector, openness and institutional quality may be included to capture their contribution to economic growth. In this regard, we derive our aggregate production function as:

$$Y_t = A_t K_t^{\alpha} L_t^{\beta} \quad \text{.....(1)}$$

Where Y_t denotes the aggregate production function (real GDP in our case) at time t, A_t total factor productivity at time t, K_t capital stock at time t and L_t denotes the stock of labour[2] at time t. We assume that the impact of FDI inflows, credit to the private sector (CREP), the interaction variable FDI*CREP, openness (OPN), gross fixed capital formation (GFC) and institutional quality (INSQ) on economic growth is via changes in A_t. Therefore A_t is a function of FDI, CREP, FDI*CREP, OPN, GFC and INSQ. Hence,

$$A_t = f(FDI_t, CREP_t, (FDI * CREP)_t, OPN_t, GFC_t, INSQ)$$

$$= FDI_t^{\phi} CREP_t^{\delta} (FDI * CREP)_t^{\theta} OPN_t^{\psi} GFC_t^{\tau} INSQ_t^{\omega} \quad \text{.....(2)}$$

We substitute equation (2) into equation (1) to obtain:

$$Y_t = K_t^{\alpha} L_t^{\beta} FDI_t^{\phi} CREP_t^{\delta} (FDI * CREP)_t^{\theta} OPN_t^{\psi} GFC_t^{\tau} INSQ_t^{\omega} \quad \text{.....(3)}$$

[2] In our regression analysis, we combine labour and human capital per worker to form one variable HUM. We also include the interaction variable between FDI and CREP in case one and then FDI and HUM in the second case.

To capture pre-reform and reform periods in Tanzania, we include in equation (3) the dummy variable DUM = 0 for the period 1970 to 1986 and DUM = 1 from 1986 to 2006. Thus equation (3) becomes:

$$Y_t = K_t^{\alpha} L_t^{\beta} FDI_t^{\phi} CREP_t^{\delta} (FDI * CREP)_t^{\theta} OPN_t^{\psi} GFC_t^{\tau} INSQ_t^{\omega} DUM_t^{\rho} \quad \text{.....(4)}$$

Taking the natural log of both sides of equation (4) we obtain:

$$\ln Y_t = c + \alpha \ln K_t + \beta \ln L_t + \phi \ln FDI_t + \delta \ln CREP_t + \theta \ln(FDI * CREP)_t + \psi \ln OPN_t + \tau \ln GFC_t + \omega \ln INSQ_t + \rho \ln DUM_t + \varepsilon_t \quad \text{.....(5)}$$

Where c is a constant, ε_t is error term, $\alpha, \beta, \phi, \delta, \theta, \psi, \tau, \omega$ and ρ are constant elasticity coefficients of output with respect to K_t, L_t, FDI_t, $CREP_t$, $(FDI * CREP)_t$, OPN_t, GFC_t, $INSQ_t$ and DUM_t. The coefficients $\alpha, \beta, \phi, \delta, \psi, \tau, \omega$ and ρ are expected to be positively related to aggregate output, Y_t.

3.1.1 Choice of the variables and data description

The model we estimate uses nine variables. Apparently theory does not provide guidance pertaining to the number of variables to be included in the growth equation. Hermes and Lensik (2003) argue that the number of variables to be included in the growth equation depends on the objective and belief of the researcher. Some studies have produced robust results with few variables. See for instance Levine and Renelt (1992) and King and Levine (1993a). Below, we provide brief description of the study variables.

1. Y_t the log of real GDP, the dependent variable in the model. It is a gauge of development prospects.
2. *LFDI* represents log of foreign direct investment inflow to GDP. According to the IMF Balance of Payments Manual 5, FDI constitutes direct equity investment, long and short-term shareholder and inter-company loans and supplier credits from related companies. *LFDI* enters the model on its own and as an interaction term with log of credit to the private sector, *LCREP*.
3. *LCREP* measures credit to the private sector as a percentage of GDP. This is used as a measure of development of the domestic financial system. The domestic financial system here constitutes retail, wholesale, informal and formal institutions offering financial services to individuals, business and other financial institutions. Various indicators have been proposed in the literature to proxy for level of domestic financial development. Some studies have used money supply variables M1, M2 or M3 since

they are easily available. It is however argued that these variables relate more to the ability of financial system to provide transaction services rather than channelling funds from savers to borrowers. Recent studies (e.g. King and Levin, 1993a and 1993b; De Gregorio and Guidotti, 1995, Levine, 1999; Alfaro et al., 2003 and Khan 2007) have favoured credit to the private sector. The argument is that it excludes credit to the public sector, thus it measures more accurately the role of financial intermediaries in channelling funds to the private sector. Although this variable is a biased indicator of financial development as it reflects development in the banking sector alone ignoring stocks and bond markets, the level of biasness is however not expected to have significant effects on the study model given the infancy and underdevelopment of stock and bonds market in Tanzania. However, we run separate regressions for LM3, LCREP and total credit to both private and non private sector (LTCRED) to check the robustness of the model.

4. *HUM* is log of human capital stock per worker measured by the average number of years of schooling per capita of the working population. Some studies have used primary school enrolment rate while others have used secondary school enrolment rate as a proxy for human capital. They include Root and Ahmed (1979), Scheneider and Frey (1985), Mankiw, Rome and Weil (1992), and Noorbakhsh and Paloni (2001). Primary and secondary school enrolment are also used in this study for the purpose of checking the robustness of the model. Human capital is important for the model as it is applied for the acquisition of the skills, experience and research techniques associated with FDI. Well educated people are better equipped to absorb and spread the knowledge embodied in new innovations. Borensztein et al. (1998) argue that differences in technology absorption capabilities may explain variations in growth effects of FDI across countries.
5. *LGFC* is log of gross fixed capital formation share in GDP which is a proxy for capital. This is one of important basic components of traditional economic growth model.
6. *LOPN* represents log of exports plus imports as share of GDP. It is a measure of openness.
7. *LINSQ* represents institutional quality. New growth theories have identified various obstacles to growth including lack of property rights, corruption, rule of law, inefficient bureaucracy and political instability. These obstacles prevent resources from being channelled into productive investments and instead divert them into

unproductive activities such as rent seeking. Some studies have included these obstacles in estimating growth models to measure the impact of institutional quality on economic growth. See for instance Easterly and Levine (2003), Rigobon and Rodrik (2005) and Stroup (2007). Data for institutional quality was obtained from Marshall and Jaggers (2007) Polity IV database where aggregate measure of institutional quality employs Polity II score. The measure includes four dimensions namely (1) competitiveness of executive recruitment, (2) openness of executive recruitment, (3) constraints on the chief executive, and (4) competitiveness of political participation. Scores range from −10 (high autocracy) to 10 (high democracy). Dessy and Vencatachellum (2007) argue that Polity IV has the advantage of being quite exhaustive in its coverage of African countries compared to other measures of governance.

8. *DUM* is the dummy variable to capture pre-reform (*DUM* = 0 for the period 1970 to 1986) and reform (*DUM* = 1 from 1986 to 2006) periods in Tanzania.

3.1.2 Data type and sources

The study utilizes 36 annual observations which cover 1970 - 2006 period. The data were obtained from the Bank of Tanzania (various publications), the National Bureau of Statistics, International Financial Statistics (IFS), World Bank statistical year books, OECD tables, Marshall and Jaggers (2007) Polity IV database and UNCTAD publications. Data on human capital was obtained from Xuereb et al. (2005).

3.2 Methodology

Empirical analysis is based on bounds testing approach of cointegration within the framework of Autoregressive Distributed Lag (ARDL) developed by Peresan et al. (2001). The technique follows three main steps. In analyzing the time series properties of the variables used in the study, both Phillips-Perron and Augmented Dickey Fuller (ADF) procedures are used to test whether the study variables are stationary. After testing for unit roots, an Ordinary Least Square (OLS) model is estimated in order to test for the existence of long-run relationships between the variables by conducting F-test for joint significance of the coefficients of lagged levels of variables. Then, conditional ARDL long-run model is estimated and lastly, both short and long run relationships are estimated simultaneously. To illustrate the ARDL modeling technique, we consider the following model:

$$y_t = \beta_0 + \beta_1 x_t + \beta_2 z_t + e_t \quad \text{.....(6)}$$

Where y_t, x_t and z_t are different time series variables, β_0 is a constant and β_1 and β_2 are parameter coefficients. From equation (6), the error correction version of the ARDL(p, q_1, q_2)[3] model can be formulated as:

$$\Delta y_t = \beta_0 + \sum_{i=1}^{p} \alpha_i \Delta y_{t-i} + \sum_{i=0}^{q_1} \eta_i \Delta x_{t-i} + \sum_{i=0}^{q_2} \zeta_i \Delta z_{t-i} + \lambda_1 y_{t-1} + \lambda_2 x_{t-1} + \lambda_3 z_{t-1} + \varepsilon_t \quad \text{.....(7)}$$

Where α_i, η_i and ζ_i represent short run relationship and, λ_1, λ_2 and λ_3 represents long run relationship. On the basis of equation (7), we formulate the ARDL$(p, q_1, q_2, q_3, q_4, q_5, q_6, q_7)$ model of our concern as follows:

$$\begin{aligned}\Delta LGDP_t = {} & \beta_0 + \beta_1 LGDP_{t-1} + \beta_2 LFDI_{t-1} + \beta_3 LHUM_{t-1} + \beta_4 LCREP_{t-1} + \beta_5 LGFC_{t-1} + \beta_6 LOPN_{t-1} + \\ & \beta_7 LINSQ_{t-1} + \beta_8 (LFDI * LCREP)_{t-1} + \sum_{i=1}^{p} \beta_9 \Delta LGDP_{t-i} + \sum_{i=0}^{q_1} \beta_{10} \Delta LFDI_{t-i} + \\ & \sum_{i=0}^{q_2} \beta_{11} \Delta LHUM_{t-i} + \sum_{i=0}^{q_3} \beta_{12} \Delta LCREP_{t-i} + \sum_{i=0}^{q_4} \beta_{13} \Delta LGFC_{t-i} + \sum_{i=0}^{q_5} \beta_{14} \Delta LOPN_{t-i} + \\ & \sum_{i=0}^{q_6} \beta_{15} \Delta LINSQ_{t-i} + \sum_{i=0}^{q_7} \beta_{16} \Delta (LFDI * LCREP)_{t-i} + \beta_{17} DUM_t + \varepsilon \quad \text{.....(8)}\end{aligned}$$

where Δ, β_0 and β_i represents difference operator, intercept term and coefficients respectively, p and q_s are as defined. We estimate the equation with the interaction terms $LFDI * LCREP$ to test the strength of the hypothesis that FDI inflows and financial development are complementary in enhancing the process of technological diffusion, thus enhancing economic growth. We also interact LHUM and LFDI to assess the complementarity of human capital in enhancing growth for Tanzania.

3.2.1 Bounds testing procedure

Bound testing technique follows three steps. In the first step, we estimate equation (8) by ordinary least squares (OLS) to facilitate testing for the existence of a long-run relationship among the variables of interest. Then we conduct an F-test for the joint significance of the coefficients of the lagged levels of the unrestricted error correction model as:

Null hypothesis; $H_0 : \beta_1 = \beta_2 = \beta_3 = ... = \beta_k = 0$

Alternative hypothesis; $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq ... \neq \beta_k \neq 0$ where k is the number of explatory variables. In the second step, we utilize asymptotic critical bounds values which

[3] p denotes lag length of dependent variable and qs denote lag length of independent variables.

provide a test for cointegration when the independent variables are $I(\delta)$ where $0 \leq \delta \leq 1$. An estimated lower F-test value assumes the regressors are $I(0)$ while if estimated F-test is higher than the upper value, $I(1)$ regressors are assumed. Consequently, if the F-statistic is above the upper critical value, the null hypothesis of no long-run relationship is rejected irrespective of the orders of integration for the time series. On the other hand, if the test statistic falls below the lower critical value the null hypothesis cannot be rejected. However, if the statistic falls between the lower and upper critical values, the result is inconclusive. If the null hypothesis of no long-run relationship is rejected, then an ARDL model for both short and long run relationships are estimated simultaneously.

4. Empirical Results and Analysis

The objectives of this study are twofold. Firstly, we empirically investigate whether the level of development of Tanzania's financial system enhances the positive relationship between FDI and economic growth for the period 1970 - 2006. We argue that domestic financial system is complementary in enhancing the process of technological absorption and thereby increasing the growth rate of the economy. In this respect, we focus mainly on foreign direct investment (LFDI), credit to the private sector (LCREP) and their interaction variable (LFDI*LCREP). In the next section, we examine whether FDI interacts with the stock of human capital to affect Tanzania's economic growth rate during the same period. Here, our major focus is on LFDI, human capital variable (LHUM) and their interaction (LFDI*LHUM).

4.1 Results on interaction between LFDI and LCREP

4.1.1 Unit root tests

Prior to performing the ARDL bound test, we execute an Augmented Dickey Fuller (ADF) and Phillip's Peron unit root tests in line with Dickey and Fuller (DF), 1979 and Phillips-Perron (1994) on all the variables in order to determine the order of integration. ADF is augmented version of DF which is used for larger and more complicated time series models. It allows for higher order autoregressive process. Phillips-Perron test on the other hand corrects the test statistics for possible time dependence in the series by using nonparametric technique. The test however uses the same critical values as ADF test. We employ both ADF and Phillips Peron tests and the results are reported in Table 5[4].

Testing for unit root is necessary to ascertain whether variables are not integrated of order 2 or beyond. Bound testing approach is based on the assumption that variables are purely I(0), I(1) or mutually cointegrated (Pesaran et al., 2001). Unit root tests regressions include both constant and time trends and constant with no time trend in their first differences. As reported, all the variables except (LHUM) are statistically insignificant (non-stationary) at their levels and became significant in their first difference implying that they are integrated of order I(1). Test results for all other variables are similar for both ADF and Phillips-Perron except for human capital (LHUM) which is stationary in level under ADF but not stationary

[4] Plots of I(1) variables in their first differences are reported in Appendix 1

at level and first difference under Phillips-Peron test. Since none of the variables is of higher order of integration beyond 1, we have justification of using the ARDL estimation technique.

Table 5: Results of the unit root test

	Augmented Dickey Fuller (ADF) Test					*Phillips-Perron Test*				
Variable	*In Levels*	*Lag length*	*1st Difference*	*Lag length*	*I(d)*	*In Levels*	*Band width*	*1st Difference*	*Band width*	*I(d)*
LFDI	-2.23	0	-7.79***	0	I(1)	-2.02	2	-7.79***	0	I(1)
LCREP	-2.49	0	-5.84***	0	I(1)	-2.57	2	-5.84***	4	I(1)
LTCRED	-2.46	1	-4.82***	0	I(1)	-2.24	5	-4.73***	5	I(1)
LGFC	-2.74	0	-5.87***	0	I(1)	-2.80	3	-6.89***	10	I(1)
LHUM	-7.18***	1	n.a	n.a	I(0)	-1.47	5	-1.45	4	n.a
LOPN	-2.55	3	-4.34***	0	I(1)	-1.667	3	-4.28***	2	I(1)
LINSQ	-1.75	0	-6.16***	0	I(1)	-1.69	2	-6.17***	2	I(1)
LM3	-1.39	0	-4.47***	0	I(1)	-1.89	3	-4.48***	2	I(1)
LFDI*LCREP	-1.32	0	-6.91***	0	I(1)	0.71	2	-7.01***	2	I(1)
LFDI*LM3	-2.23	0	-7.76***	0	I(1)	-2.06	0	-7.96***	2	I(1)
LFDI*LTCRED	-2.73	0	-7.55***	0	I(1)	-2.64	1	8.22***	5	I(1)

Note: ADF and Phillips-Peron tests are based on MacKinnon (1996) one-sided p-values. The order of integration is given in parentheses. *** indicate 1 percent level of significance. The lag length selection is based on Schwarz Information Criterion (SIC) while band width is based on Newey-west using Bartlett kernel. All variables have been transformed into log form. Results are as obtained from EViews5.

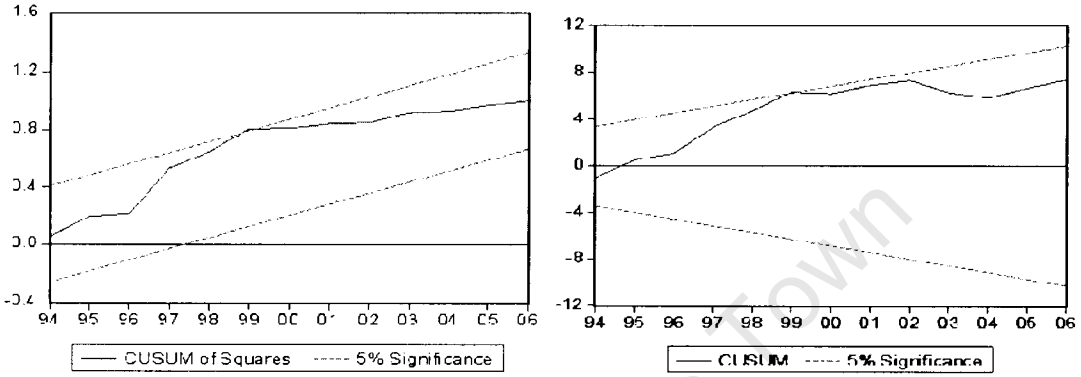
4.1.2 Bound tests for cointegration

In the next step, we test for the presence of long-run relationship using equation 8. Firstly, we run OLS regressions and each time, every variable is treated as dependent variable. We then perform joint significance test of the coefficients by imposing zero restrictions on the one period lagged variables. The computed F-statistics when regression are normalized on LGDP is 4.71 while the lower bound I(0) is 2.75 and upper bound I(1) is 4.21 at 5 percent significance level. On the basis of F-statistic therefore, the null hypothesis of no cointegration is rejected at 5 percent level of significance since the computed F-statistic is higher than the upper bound of the critical value. Therefore, we conclude that there exists a long-run relationship among the variables of the model when regressions are normalized on LGDP[5]. We conduct structural stability test by employing the cumulative sum of recursive residuals (CUSUM) and the cumulative sum squares of recursive residuals (CUSUMSQ).

[5]The calculated F-statistic is higher than the upper bound critical value when regressions are normalized on real GDP, human capital and institutional quality. However, on the basis of the growth theory, we focus our analysis on the model with regressions normalized on real GDP; see also Fosu and Frimpong (2006).

The plots of CUSUM and CUSUMSQ are used in ascertaining the reliability of the ARDL model. The plots of CUSUM and CUSUMSQ test at 5 percent significance level are reported in Figure 6. As shown, the model is fairly stable over time.

Figure 6. CUSUM and CUSUMSQ stability test



Having established the existence of a cointegrating long-run relationship, we then estimate a regression equation with variables normalized on real GDP. The estimation results and diagnostic tests based on this normalization for both long and short run relationships are reported in Table 6.

Table 6. Estimated long-run and short-run coefficients using ARDL[6]

Variable	Coefficient	t-Statistic	
	Panel (a) Long-run relationships		
LGDP(-1)	-0.1752	-2.5185	
LFDI(-1)	-0.1175	-3.0581	
LCREP(-1)	-0.0015	-0.1386	
LFDI*LCREP(-1)	0.0343	2.2434	
LHUM(-1)	0.0344	1.0956	
LOPN(-1)	0.0247	1.0585	
LINSQ(-1)	0.2145	3.5832	
C	1.581	2.6482	
	Panel (b) Short run relationship		
D(LFDI)	-0.0397	-1.2897	
D(LCREP)	0.0073	0.7011	
D(LFDI*LCREP)	0.0073	0.4642	
D(LHUM)	0.4867	1.2235	
D(LOPN)	0.0028	0.0974	
D(LINSQ)	0.0831	1.4127	
	Panel (c) Diagnostic tests		
R-squared	0.643	Mean dependent var.	0.0335

[6] The dependent variable is LGDP

Adjusted R-squared	0.4321	S.D. dependent var.	0.0233
S.E. of regression	0.0176	Akaike info criterion	-4.9581
Sum squared resid.	0.0068	Schwarz criterion	-4.3423
Log likelihood	103.2462	F-statistic	3.0485
Durbin-Watson stat	2.1687	Prob(F-statistic)	0.0103
Obs. after adjustments	36		

As reported in panel (a) of Table 6, the coefficient of LFDI is significantly negative but its interaction with credit to the private sector, LFDI*LCREP, is positive and significant (at 3.5 percent). This provides evidence that Tanzania's financial system acts as a mechanism through which benefits from FDI are transferred to promoting long-run economic growth. We therefore find a preliminary support for the main hypothesis of the study that FDI positively affects economic growth when the domestic financial system has reached a minimum level of development. Based on these results, we are able to determine the threshold level of development of the domestic financial system above which foreign direct investments start to have positive effects on economic growth. This is determined by differentiating the estimated long-run model with respect to LFDI and setting it equal to zero (see also Alfaro et al. 2000; Durham, 2004 and Khan, 2007), i.e.

$$LGDP = 1.5810 - 0.1175LFDI - 0.0015LCREP + 0.0343LFDI * LCREP + 0.0344LHUM + 0.0247LOPN + 0.2145LINSQ$$

Solving $\frac{\partial GDP}{\partial LFDI} = 0,$

we obtain LCREP = 3.4

The threshold value for long-run is 3.4 implying that foreign direct investments will have positive effects on Tanzania's economic growth only when credit to the private sector to GDP is above 30 percent (i.e. antilog of 3.4 is 29.97). We also observe in the lower panel of Table 6 that, albeit insignificant, the short run coefficient of FDI is negative on its own but positive when interacted with the financial variable.

The financial market indicator on its own turns out to be insignificantly negative. Theory and numerous empirical findings have shown however, that financial development facilitate resource mobilization and hence facilitate economic growth. Krugman (1998) and Al-Yousif (2002) argue that negative relationship between financial sector and growth emanates from business cycle effects as well as inefficiency of the domestic financial sector in allocating

resources efficiently due to weak regulatory environment. Khan (2007) argues that the negative effects of financial indicator on economic growth may arise from the inclusion of the interaction term[7]. In the case of Tanzania, the negative sign of the financial development indicator may partly be contributed by the fact that between 1967 and 1991, banks and other financial institutions were nationalized under the Arusha Declaration whereby the financial system was entirely controlled by the state. The system was comprised of very few players and The National Bank of Commerce was the only commercial bank with 90 percent of all deposit liabilities belonging to deposit-taking institutions which were inadequately supervised. The financial system was geared toward providing cheap credit to the central government, parastatals and cooperatives. Consequently, large losses were incurred due to poor management, bad project choice, inadequate supervision and legal protection. Since 1984 financial sector reforms started slowly under the popular Economic Recovery Program (ERP). Among the objectives of ERP were to reduce credit expansion particularly to the state owned enterprises and to redirect more of it to the private sector.

In the recent years, a lot of development has taken place in the country's financial sector. Following financial sector reforms, the quality of financial services has improved significantly. New financial institutions locally and foreign owned have been established and are free to determine the level of interest rates based on market forces. As a result of improvements in the financial sector, commercial banks lending to the private sector increased from US$405.73 million in 1999 to US$ 1,554.57 million (11.8 percent of GDP) in 2006, share of deposits in private banks to total deposits increased from 51.5 percent in 1999 to 80 percent in September 2006. Capital market for mobilizing investment resources has been established and public participation increased with market capitalization of US$2.3 billion and 97,000 shareholders in 2006, compared to US$182.07 million and 30,500 shareholders in 1999 (BOT, 2006).

Trade openness (import plus exports to GDP ratio) has the expected positive sign but insignificant. This shows that trade openness does not contribute to Tanzania's economic growth. This may be explained by the observation that during the period under study, Tanzania has maintained a deficit balance of trade in goods and services. The average growth rate of export is 24.59 percent while that of import is 27.11 percent during 1970 – 2006.

[7] Removal of interaction term from the model makes the financial sector variable significantly positive.

The coefficient of institutional quality is positive and highly significant (at 1 percent)[8]. This variable constitutes competitiveness of executive recruitment, openness of executive recruitment, constraints on the chief executive, and competitiveness of political participation. Tanzania was under one party system since independence in 1961 until 1995 when multiparty democracy was introduced. However, the executive powers have continued to be under the control of the ruling party. This notwithstanding, there has never been a remarkable politically motivated violence in the country particularly in the Mainland Tanzania[9]. Tanzania is one of the few countries in Africa that have continued to enjoy political stability since independence. According to Tanzania Investment report of 2004, foreign investors' perception on Tanzania's political stability is positive and indeed, the country's political stability is viewed as one of the important incentives to invest in the country.

The coefficient of human capital is positive but insignificant. The link between FDI, human capital and growth is via the spillover effects of technology transfer. It is argued that the impact FDI on growth is higher where there is a minimum level of human capital to absorb technology associated with FDI and hence increase productivity. Our results therefore show that human capital does not have a direct impact on Tanzania's economic growth. This is not a surprising results since Tanzania is among the countries with lowest level of educated population in the world (Wangwe et al. 2005)[10]. The coefficient dummy variable (DUM) for macroeconomic reforms was dropped from model specification because it turned insignificant in all regressions estimated.

We test the robustness of the model by re-running separate regressions using other indicators of financial development discussed in the literature and compare the results. We also include gross fixed capital formation together with other variables in order to gauge how FDI affects growth[11]. The results of these regressions are summarized in Table 7. In model 1, gross fixed capital formation is excluded. The results are the same as those reported in Table 6; hence, our focus is now on models 2, 3 and 4.

[8] Coefficient on institutional quality was positive and significant in all regressions estimated.
[9] Although the ruling party is still in power since independence, dictatorship has not been experienced in Tanzania.
[10] A detailed analysis on human capital is deferred to the next focus of the paper where FDI is interacted with the human capital variable.
[11] For further details on the inclusion and exclusion of gross fixed capital formation in the growth model, see Hermes and Lensik (2003).

Table 7. Short and long run relations, different cases.

	Model 1		Model 2		Model 3		Model 4	
Variables	Coeff.	t-Stat.	Coeff.	t-Stat.	Coeff.	t-Stat.	Coeff.	t-Stat.
				Long run relationship				
LGDP(-1)	-0.175	-2.518	-0.166	-2.455	-0.127	-1.740	-0.148	-1.746
LFDI(-1)	-0.117	-3.058	-0.159	-4.383	-0.350	-1.599	0.077	0.651
LCREP	-0.001	-0.139	-0.002	-0.187				
LFDI*LCREP(-1)	0.034	2.243	0.050	3.495				
LHUM(-1)	0.034	1.096	0.043	1.494	0.016	0.469	0.012	0.419
LOPN(-1)	0.025	1.059	0.038	1.824	0.007	0.207	0.062	2.935
LINSQ(-1)	0.215	3.583	0.196	3.604	0.214	3.342	0.208	2.363
LGFC(-1)			-0.074	-1.968				
LM3(-1)					-0.038	-1.193		
LFDI*LM3(-1)					0.091	1.375		
LTCRED(-1)							0.013	0.652
LFDI*LTCRED(-1)							-0.038	-1.134
C	1.581	2.648	1.519	2.752	1.442	2.242	1.353	1.965
				Short run relationship				
ΔLFDI	-0.040	-1.290	-0.060	-2.149	-0.359	-2.003	0.022	0.200
ΔLCREP	0.007	0.701	0.007	0.707				
ΔLFDI*LCREP	0.007	0.464	0.017	1.191				
ΔLHUM	0.487	1.224	0.398	1.137	0.198	0.336	1.066	2.863
ΔLOPN	0.003	0.097	-0.022	-0.783	0.020	0.802	0.027	0.974
ΔLINSQ	0.083	1.413	0.095	1.812	0.084	1.408	0.097	1.582
ΔLGFC			0.013	0.381				
ΔLM3					-0.041	-0.989		
ΔLFDI*LM3					0.105	1.926		
ΔLTCRED							0.010	0.462
ΔLFDI*LTCRED							-0.011	-0.317
				Diagnostic tests				
R-squared	0.643		0.754		0.623		0.596	
Adjusted R-sq.	0.432		0.569		0.400		0.358	
S.E. of regression	0.018		0.015		0.018		0.019	
Sum squared resid.	0.007		0.005		0.007		0.008	
Log likelihood	103.246		109.943		102.263		101.025	
D. Watson stat	2.169		2.739		2.313		2.063	
Mean dep. var.	0.034		0.034		0.034		0.034	
S.D. dep. var.	0.023		0.023		0.023		0.023	
Akaike info criterion	-4.958		-5.219		-4.904		-4.835	
Schwarz criterion	-4.342		-4.515		-4.288		-4.219	
F-statistic	3.049		4.085		2.797		2.498	
Prob(F-statistic)	0.010		0.002		0.016		0.028	
Obs. (after adj.)	36		36		36		36	

In model 2 gross fixed capital formation (LGFC) is included. Magnitudes of the coefficients aside, FDI remains significant but negative on its own while higly significant and positive when interacted with the financial sector development variable similar to model 1. Also, the financial development indicator LCREP remains insignificantly negative on its own. However, the interaction of the two variables continues to be significantly positive (at 1 percent). Using similar approach to the previous case, we determine the threshold level of development of the domestic financial system above which foreign direct investments start to have positive effects on economic growth by differentiating the estimated long-run model with respect to LFDI and setting it equal to zero. i.e.

$$LGDP = 1.519 - 0.159LFDI - 0.002LCREP + 0.05LFDI * LCREP + 0.043LHUM + 0.038LOPN + 0.196LINSQ - 0.074LGFC$$

Solving $\frac{\partial GDP}{\partial LFDI} = 0$,

we obtain $LCREP = 3.2$

This time we find that with the inclusion of gross fixed capital formation in the regression model, FDI starts to contribute positively to growth when credit to the private sector is above 25 (antlog of 3.2 is 24.5) percent of GDP. The difference on the threshold level may be attributed to the fact that FDI is already contained in gross fixed capital formation variable. Human capital on the other hand, remains positive and insignificant.

In case 3, the financial development indicateor, LCREP is replaced by money supply (M3). We observe that the results are essentially the same. LFDI and M3 are insignificanlty negative on their own but positive and significant when interacted both in the short and long run. However, the level of significance of the interaction term is weaker (at 10 percent). It has been argued in the literature that M3 relates more to the ability of financial system to provide transaction services rather than channeling funds from savers to borrowers. Credit to the private sector is a better proxy for financial development because it measures more accurately the role of financial intermediaries in channeling funds to the private sector (see also King and Levin, 1993a and 1993b; De Gregorio and Guidotti, 1995; Levine, 1999 Alfaro et al., 2003; and Khan 2007).

In model 4, total credit to both public and private sector, LTCRED replaces LCREP. Unlike in the previous models, LFDI, the financial development indicator and their interaction are

all insignificant. In this case, we find an empirical evidence to support the argument that credit to the private sector is a better measure of the level of development of the financial sector especially for the countries like Tanzania where capital markets are not adequately developed.

4.2 Results on interaction between LFDI and LHUM

The purpose of our empirical investigation in this subsection is to examine whether FDI interacts with the stock of human capital to affect Tanzania's economic growth rate for the period 1970 - 2006. We follow similar bounds testing estimation technique (ARDL) employed in the previous section. We introduce new variables namely secondary school enrolment rate (SCEN) and primary school enrolment rate (PREN) which will be used as alternative measures of human capital. The main objective is to gauge the robusness of the model when human capital is proxied by the average number of years of schooling per capita of the working population. We start by performing unit root tests for the new variables and the results are reported in Table 8[12]. As reported, all the new variables are I(1) except the log of primary school enrolment rate which is I(0). We are therefore justified to utiliszing the ARDL estimation approach.

Table 8. Unit root test results

	Augmented Dickey Fuller (ADF) Test					*Phillips-Perron Test*				
Variable	*In Levels*	*Lag length*	*1st Difference*	*Lag length*	*I(d)*	*In Levels*	*Band width*	*1st Difference*	*Band width*	*I(d)*
LSCEN	-2.11	0	-6.47	0	I(1)	-2.19	3	-6.63***	3	I(1)
LPREN	-1.68*	1	n.a	n.a	I(0)	-2.72***	4	n.a	n.a	I(0)
LFDI*LHUM	-2.17	0	-7.71***	0	I(1)	-1.96	2	-7.71***	0	I(1)
LFDI*LSCEN	-2.43	0	-7.87***	0	I(1)	-2.23	2	-7.87***	0	I(1)
LFDI*LPREN	-2.21	0	-7.21***	0	I(1)	-2.15	3	-7.27***	2	I(1)

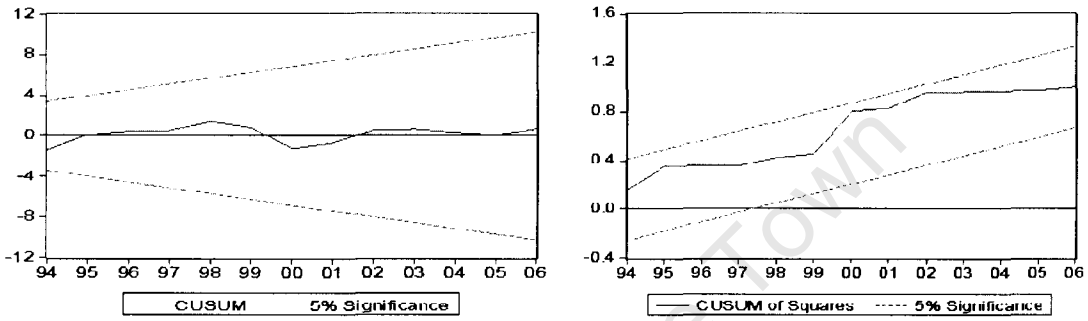
Note: ADF and Phillips-Peron tests are based on MacKinnon (1996) one-sided p-values. The order of integration is given in parentheses. * and *** indicate 10 and 1 percent levels of significance respectively. The lag length selection is based on Schwarz Information Criterion (SIC) while band width is based on Newey-west using Bartlett kernel. All variables have been transformed into log form. Primary school enrolment, LPREN only became stationary with neither intercept nor trend. Results are as obtained from EViews5.

We estimate an ARDL regression as specified in equation (8) replancing LFDI*LCREP with LFDI*LHUM for the first differences of the variables. The model is farely stable over time as reported in the plots of CUSUM and CUSUMSQ tests at 5 percent significance level (Figure 7). The joint significance test of the parameters of the lagged level variables when

[12] Plots of unit root tests in first differences are reported in Appendix 1

added to the first regression shows that the calculated F-statistic when the regressions are normalised on real GDP per capital is 5.58 which is higher than the upper bound critical value of 4.209 at 5 percent significance level.

Figure 7. CUSUM and CUSUMSQ stability test



We therefore find proof of existence of long-run cointegration relationship when FDI is interacted with human capital. We then estimate short and long run cointegration relationships. The results are reported in Table 9. Our results are not significantly different from those obtained when FDI is interacted with the financial development indicator. Like in the previous case, the direct effect of FDI on growth is negative. However, its interaction with human capital is significant at 1 percent. Also, the coefficient of human capital on its own is positive but insignificant. There is therefore a strong complementarity between FDI and human capital implying that the contribution of FDI to growth is enhanced by its interaction with the level of human capital in the domestic economy. Hence, the country will maximize the benefits of FDI when the level of human capital is sufficiently high. Borensztein et al. (1998) found similar results with their study on how does FDI affect economic growth. They find that for countries with low human capital, the direct effect of FDI is negative but the interaction between FDI and human capital turns out to be positive and significant. See also, Balasubramanyan, Salisu, and Sapsford (1999).

Table 9. Short and long run relationships with interaction of LFDI and LHUM

Variable	Coefficient	t-Statistic
	Panel (a), Long-run relationship	
LGDP(-1)	-0.1655	-2.8233
LFDI(-1)	-1.4231	-2.8816
LCREP(-1)	0.0004	0.0386

LHUM(-1)	0.0208	0.8414	
LFDI*LHUM(-1)	0.078	2.7691	
LOPN(-1)	0.0449	2.2638	
LINSQ(-1)	0.183	2.9994	
C	1.6038	2.9906	
	Panel (b) Short-run relationship		
D(LFDI)	-0.8419	-2.2	
D(LCREP)	0.0065	0.6764	
D(LHUM)	0.834	2.6662	
D(LFDI*LHUM)	0.0469	2.1524	
D(LOPN)	0.0035	0.1334	
D(LINSQ)	0.0894	1.6193	
	Panel (c) Diagnostic tests		
R-squared	0.678	Mean dependent var.	0.034
Adjusted R-squared	0.487	S.D. dependent var.	0.023
S.E. of regression	0.017	Akaike info criterion	-5.06
Sum squared resid.	0.006	Schwarz criterion	-4.444
Log likelihood	105.1	F-statistic	3.555
Durbin-Watson stat	2.263	Prob(F-statistic)	0.004
Obs. (after adj.)	36		

In view of our results, we are able to establish the threshold level of human capital above which FDI starts to contribute positively to growth. We follow the same procedure employed in the previous section, that is, we differentiate the estimated long-run model with respect to LFDI and set it equal to zero:

$$LGDP = 1.6038 - 1.4231LFDI + 0.0004LCREP + 0.0208LHUM + 0.078LFDI * LHUM + 0.0449LOPN + 0.183LINSQ$$

Solving $\frac{\partial GDP}{\partial LFDI} = 0$,

we obtain $LHUM = 18.2$

The ant log of 18.2 is 80,197,267.41. To obtain human capital per worker, we divide 80,197,267.41 by the average total human capital for the period 1970 - 2006 which is 12,861,099. This gives 6.24 implying that the threshold level of human capital per worker above which FDI starts to have positive effects on growth for Tanzania is 6.24.

We check the robustness of the results by running three different regressions. In the first case we exclude the interaction variable LFDI*LHUM from the regression equation. The results are reported as case 1 in Table 10. We note that human capital remains insignificant even

when the interaction term is excluded. This finding is in support to the earlier studies that have shown that FDI may not contribute to growth for countries like Tanzania with low level of human capital. The direct effect of FDI on growth remains negative. In case 2, we use primary school enrolment rate as a proxy for human capital. The direct impact of both FDI and PREN on growth remains negative but significant while their interaction is significantly positive. However, the level of significance of the interaction is 10 percent which is weaker as compared to the case when the average number of years of schooling per capita of the working population proxies for human capital.

Table 10. Short and long-run relationships, different cases

	Case 1		Case 2		Case 3	
Variable	**Coefficient**	**t-Stat.**	**Coefficient**	**t-Stat.**	**Coefficient**	**t-Stat.**
Panel (a) Long-run relationship						
LGDP(-1)	-0.0787	-1.424436	0.024	0.48391	-0.0515	-1.04731
LFDI(-1)	-0.0558	-1.959373	-0.0032	-0.0697	0.1842	0.91267
LCREP(-1)	0.0042	0.396227	-0.0029	-0.2663	0.0111	0.98453
LHUM(-1)	-0.0155	-0.669496				
LOPN(-1)	0.0444	2.005746	-0.0066	-0.2637	0.0028	0.1443
LINSQ(-1)	0.2578	4.295111	0.1344	2.13841	0.1716	2.68415
LPREN(-1)			-0.0721	-2.1729		
LSCEN(-1)					-0.0078	-0.16504
LFDI*LPREN(-1)			0.172	2.00517		
LFDI*LSCEN(-1)					0.0868	1.29716
C	0.9226	1.731249	-0.4148	-0.6354	0.5456	0.64777
Panel (ii); Short-run relationship						
D(LFDI)	-0.0167	-0.907282	0.0501	1.30468	0.0211	0.12316
D(LCREP)	0.0041	0.381594	-0.0014	-0.1273	0.0087	0.74671
D(LHUM)	0.9628	2.793948				
D(LOPN)	0.0253	0.902692	-0.0027	-0.0814	0.002	0.06394
D(LINSQ)	0.1184	1.977109	0.0759	1.30236	0.0912	1.45209
D(LPREN)			-0.0719	-0.773		
D(LSCEN)					0.1059	1.50645
D(LFDI*LPREN)			0.2089	2.48898		
D(LFDI*LSCEN)					0.0171	0.29868
Panel (iii); Diagnostic tests						
R-squared	0.561278		0.583248		0.552946	
Adjusted R-sq.	0.360197		0.336985		0.288777	
S.E. of regression	0.018666		0.019002		0.01968	
Sum squared resid.	0.008362		0.007943		0.008521	
Log likelihood	99.53415		100.4589		99.1955	

D. Watson stat	2.151993	2.065905	2.029795
Mean dep. var.	0.033525	0.033525	0.033525
S.D. dep. var.	0.023336	0.023336	0.023336
Akaike info	-4.863008	-4.803272	-4.733083
Schwarz criterion	-4.335169	-4.187459	-4.11727
F-statistic	2.791301	2.368396	2.093154
Prob(F-statistic)	0.017186	0.036048	0.061176
Obs. (after adj.)	36	36	36

In case 3, secondary school enrolment rate is used as an alternative proxy for human capital. Although LFDI changes sign (positive), it does not have direct impact of growth since it is insignificant. Secondary school enrolment rate turns out to be negative and insignificant. The interaction term between LFDI and LSCEN (LFDI*LSCEN) is however positive and insignificant although the level of insignificance is higher than that of the variables on their own. This may be regarded as a further proof of complentarity of FDI and human capital in affecting growth and that LSCEN is not a good proxy of human capital. Our results are thus consistent with Krueger and Lindahl (2001) proposition that the average number of years of schooling per capita of the working population is a better proxy for human capital.

5. Conclusions

Tanzania's macroeconomic reform programs that started early 1990s have managed to bring down inflation, establish macroeconomic stability and consequently achieve high growth of the economy. The economy's good performance coupled with partial liberalization of the capital account, formulation of attractive investment policies and incentive packages; and formation of investment promotion agency, among others, have resulted into rapid growth of FDI inflows from USD 1.9 billion in 1999 to USD 5.1 billion in 2005 (TIR, 2006). Further, the report shows that domestic borrowing by companies with foreign liabilities increased to 50 percent in 2005 owing to increased and improved quality of financial services and products. Literature admits however, that although policies and incentives can be very attractive for FDI, local conditions, particularly the domestic financial system and the level of stock of human capital can limit the potential impact of FDI on economic growth of the host economy.

In this study, we have examined whether Tanzania has sufficiently developed its financial system as well as human capital in order to let FDI contribute positively to economic growth for the period 1970 -2006 using bounds testing cointegration (ARDL) approach. Our results show that foreign direct investments are important vehicle through which technological transfer translates into growth. The empirical investigation presented strongly suggests that, indeed, a minimum level of development of the local financial system is necessary for FDI to positively contribute to economic growth. We find that foreign direct investments will have long run positive effects on economic growth in Tanzania when credit to the private sector to GDP is above approximately 30 percent. The study used three different indicators to proxy for the level of development of the domestic financial system which are money supply (LM3), credit to the private sector (LCREP) and credit to both private and non sector. LCREP produced the most robust results. This provides an empirical evidence to support other findings that have shown that credit to the private sector is a better measure of the level of development of the domestic financial system particularly for the countries with weak financial market like Tanzania.

Human capital does not seem to have direct impact on economic growth for Tanzania. This finding is consistent with findings of previous studies including Wangwe et al. (2005). The interaction between FDI and human capital is however significantly positive implying that

higher productivity of FDI occurs when a minimum threshold level of human capital per worker is attained. The minimum level of human capital per worker is approximately 6.2.

Our empirical findings unravel a number of policy recommendations. Firstly, the domestic economy can influence the technological change through extending its absorptive capacity by further promoting financial sector reforms to gain sustainable economic growth and make productive use of FDI inflows. This implies that to take the advantage of positive interaction between FDI and domestic financial system, concerted efforts should be made to stimulate financial sector development in the economy.

Secondly, our results suggest that better domestic financial conditions not only attract foreign companies but also allow host economy to maximize the benefits of foreign investments by making financial resources available for investment. Thirdly, we find that the effect of FDI on economic growth is also dependent on the level of human capital available in the economy. There is a strong positive interaction between FDI and the average number of years of schooling per capita of the working population, the proxy for human capital. In this respect it is imperative that the government makes deliberate efforts to identify types of foreign investments that will benefit the country in-terms of human capital development and technological transfer. This should go hand in hand with formulation of appropriate training policies designed in collaboration with vocational training and high learning institutions, investment promotion agency and other relevant stakeholders. In this regard, it is critical to carryout training needs assessment by the relevant stakeholders in order to identify the type of training that can raise the supply and quality of skills that can be used in modern production facilities and techniques.

It is important that the government increases budgetary allocation for human development and also designs specific incentives to investor and other stakeholders in order to participate in training. Government expenditure on education has remained almost constant as it increased only by 1 percent from 2.5 percent of GDP in 1970 to 3.5 percent in 2006. The average expenditure on education between 1970 and 2006 is 2.41 percent of GDP. During the same period, primary and secondary school enrolment rates increased from 0.34 and 0.03 to 0.75 and 0.09 respectively.

In view of our findings, we suggest some areas that need further investigation:

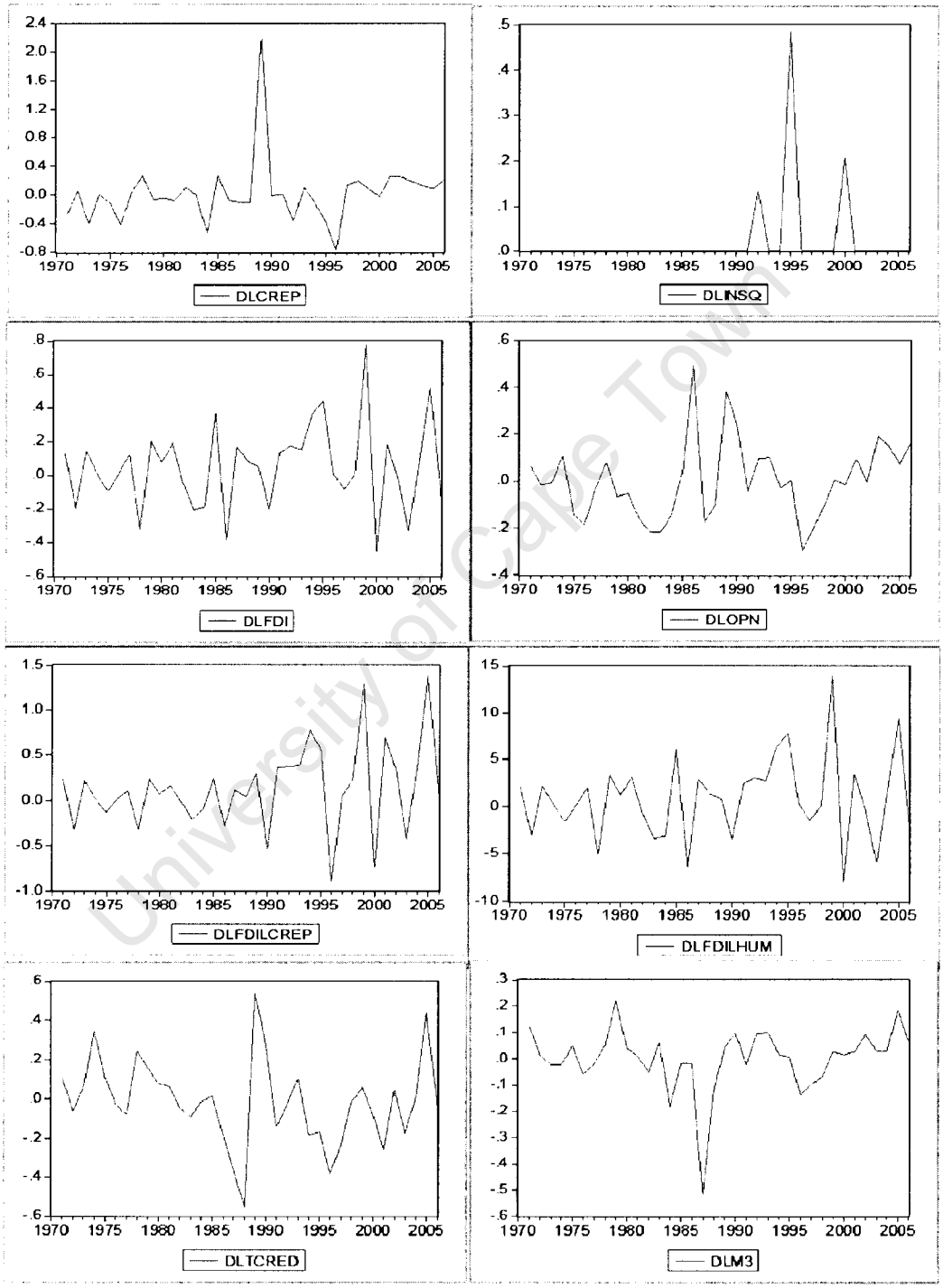
- The study has produced robust results on the empact of FDI on economic growth when FDI is interacted with human capital. Since FDI stimulates investments on training for acquisition of associated technologies, it would be interesting to investigate the impact FDI has had on human capital development for Tanzania.

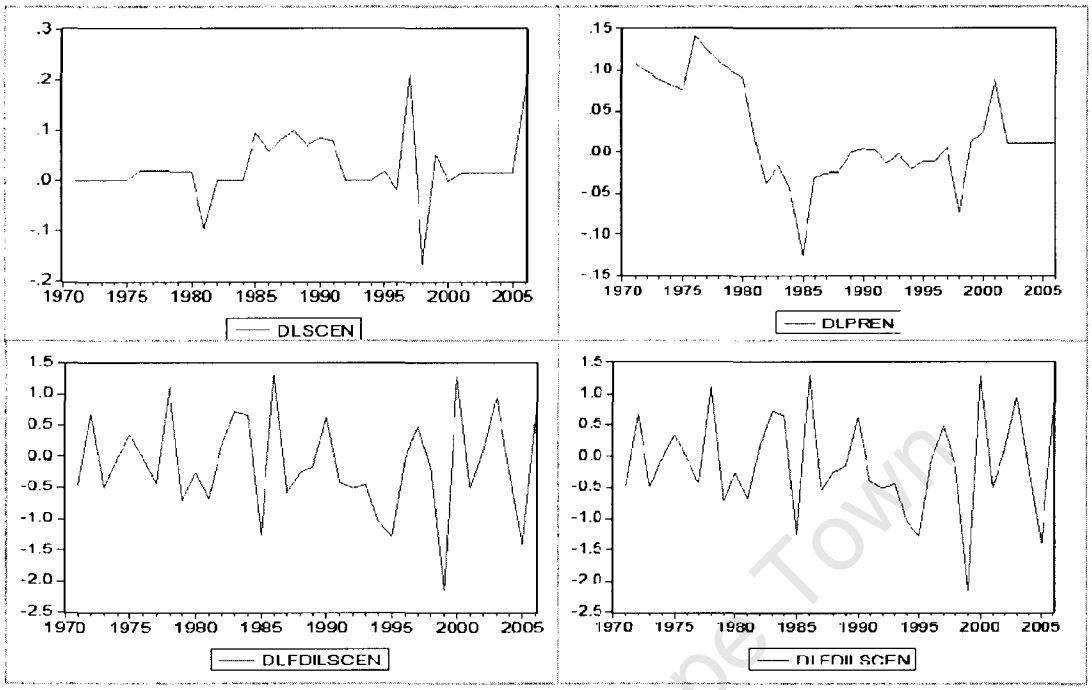
- In the recent years, Tanzania has been receving increasing inflows of FDI particularly into the mining sector. For instance, Tanzania Investment report of 2006 reveals that the stock of FDI increased by more than 160 percent from 1,992.2 USD million in 1999 to 5,190.7 USD million in 2006. Being one of the poorest countries in the world, it is imperative to investigate the impact of FDI on Tanzania poverty reduction initiatives. One of the alternatives would be investigating how FDI related enterprises exercise their corporate social responsibility particularly to the local communities surrounging their investments.

- The study has produced robust results with human capital measured by the average number of years of schooling in the working population. Xueber et al. (2005) have however, identified two shortcomings in respect of this measure. Firstly, the measure reflects imperfectly the productivity of the labour force and secondly, it does not take into account human capital accumulated over the working life for instance through vocational training. These shortcomings could be addressed by taking into account skills acquired through learning by doing. Therefore, it would be interesting to see how the results change if human capital was measured as a share of skilled and unskilled workers in the working population.

Appendices

Appendix 1: Plots of unit root test in first differences





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